New Tech Machinery

# OPERATION and MAINTENANCE MANUAL




U.S. PATENT NO. 5,425,259
U.S. PATENT NO. 6,981,397
U.S. PATENT NO. 8,011,218
U.S. PATENT(S) PENDING

# SSQ MultiPro™

## PLC Controller

## Quick Change – Commercial/Residential Roof Panel Machine

www.NewTechMachinery.com

# TABLE OF CONTENTS

# LIST OF FIGURES

# LIST OF FIGURES

# LIST OF FIGURES

CHAPTER 1

# SSQ SPECIFICATIONS

## SPECIFICATIONS

| | | |
|---|---|---|
| **SSQ Dimensions:** | Length-13' 7" | (4.1m) |
| | Width-5' | (1.5m) |
| | Height-4' 3" | (1.3m) w/Over Head Rack |
| | 1' 10" | (.6m) w/o Over Head Rack |
| | Weight-2200 lbs. | (1450kg) |
| **SSQ on Trailer:** | Length-17' 6" | (5.3m) |
| | Width-7' | (2.1m) |
| | Height-6' 3" | (1.9m) with reel |
| | Weight-4800 lbs. | (2200kg) |

**Speed:** 75 ft./min. Approx. (23m/min.) Approx.

**Drive:** Hydraulic via chain, sprocket and gear using16 polyurethane drive rollers.

**Shear:** Hydraulically Powered, Infinitely adjustable, hardened tool steel dies and blades w/Panel Recognition Proximity Sensor

**Hydraulic Fluid:** 18 Gallons - 32AW

**Coil Width:** 15" to 30" (380mm to 760mm) Note**:** 30" coil width requires Expandable Arbor or Remote De-coiler Stand.

**Materials Formed:**

| | |
|---|---|
| Painted Steel | 30ga. to 22ga. (.3mm to .8mm)<br>Painted, Galvanized, Aluminized |
| Painted Aluminum | .019" to .040" (.5mm to 1.0mm) |
| Copper | 16 oz. to 20 oz. ¾ Hard<br>(.5mm to .7mm) |
| Turne-Coat Stainless Steel | 26ga. (.5mm) |

**Controls:**

| | |
|---|---|
| Standard: | 12v Manual Control Box w/Length Control<br>Limit Switch |
| Optional: | Computer Batch and Length Control |

CHAPTER 2
# PRECAUTIONS

## PRECAUTIONS

1. **Make sure the operator of the machine has read and understands this manual in its entirety before attempting to operate this equipment.**

2. **ALWAYS** keep covers, guards and lids mounted to machine during operation

3. **OBSERVE and OBEY** all safety and warning signs affixed to the machine.

4. **ALWAYS** adhere to and follow all local and national safety codes concerning the loading and un-loading of reeled coils.

5. **USE ONLY** properly rated devices for lifting reeled coils into or out of the reel stand assembly.

6. **DO NOT** wear loose clothing, jewelry etc. that could become entangled in the moving parts of the machine when operating.

7. **STOP THE MACHINE** and disconnect the power before attempting to make any adjustments, perform any maintenance or changeover procedures.

8. **AVOID** storing the machine outdoors for long periods of time. Cover with a tarp but provide good ventilation to prevent condensation and rust.

9. **DO NOT USE SOLVENTS TO CLEAN DRIVE ROLLERS!**

10. **ALWAYS EMPTY MACHINE OF MATERIAL BEFORE TRANSPORT AND STORAGE.**

# MACHINE ORIENTATION

## MACHINE ORIENTATION

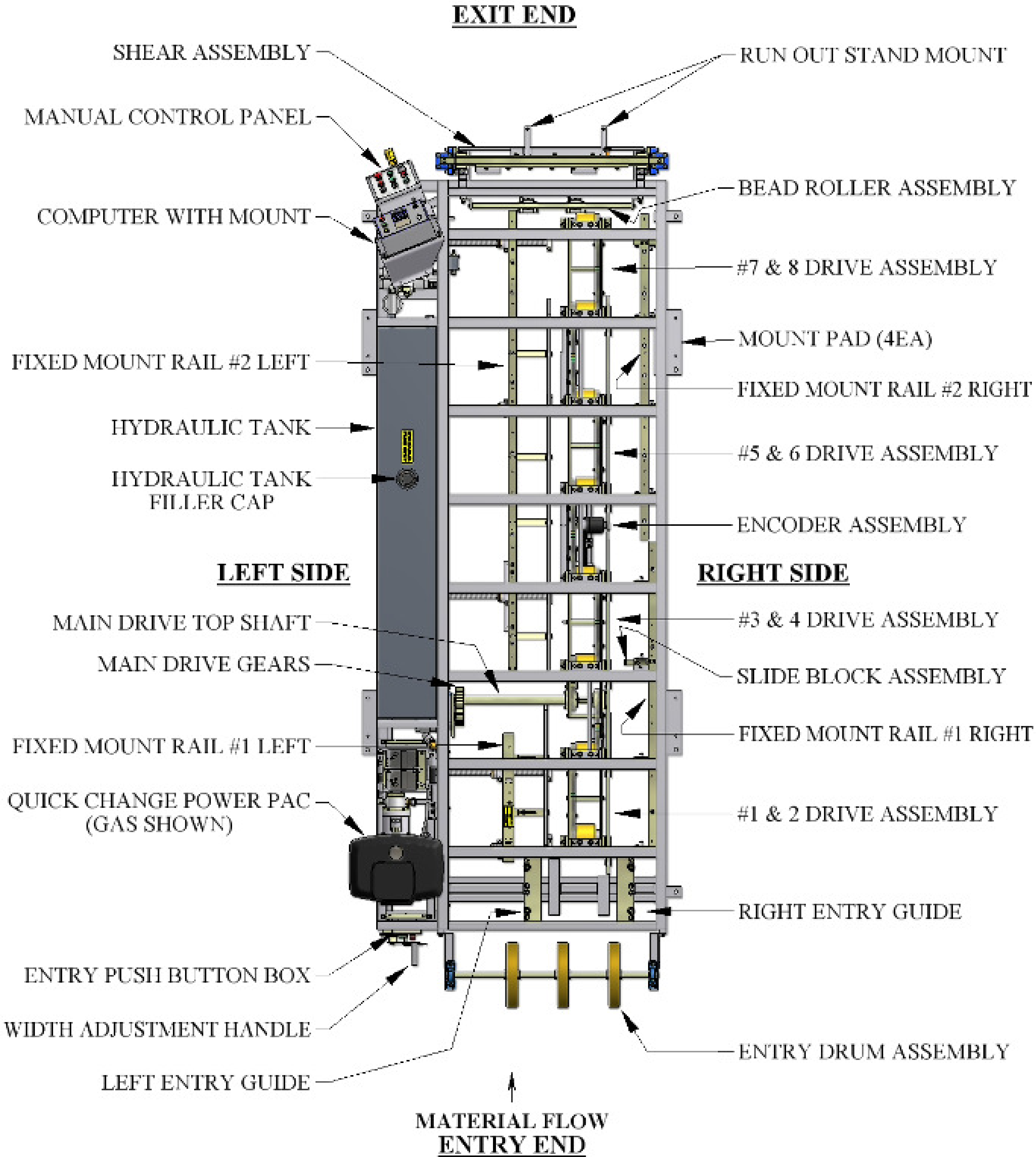



***Figure 1: Machine Orientation***

# MACHINE ORIENTATION

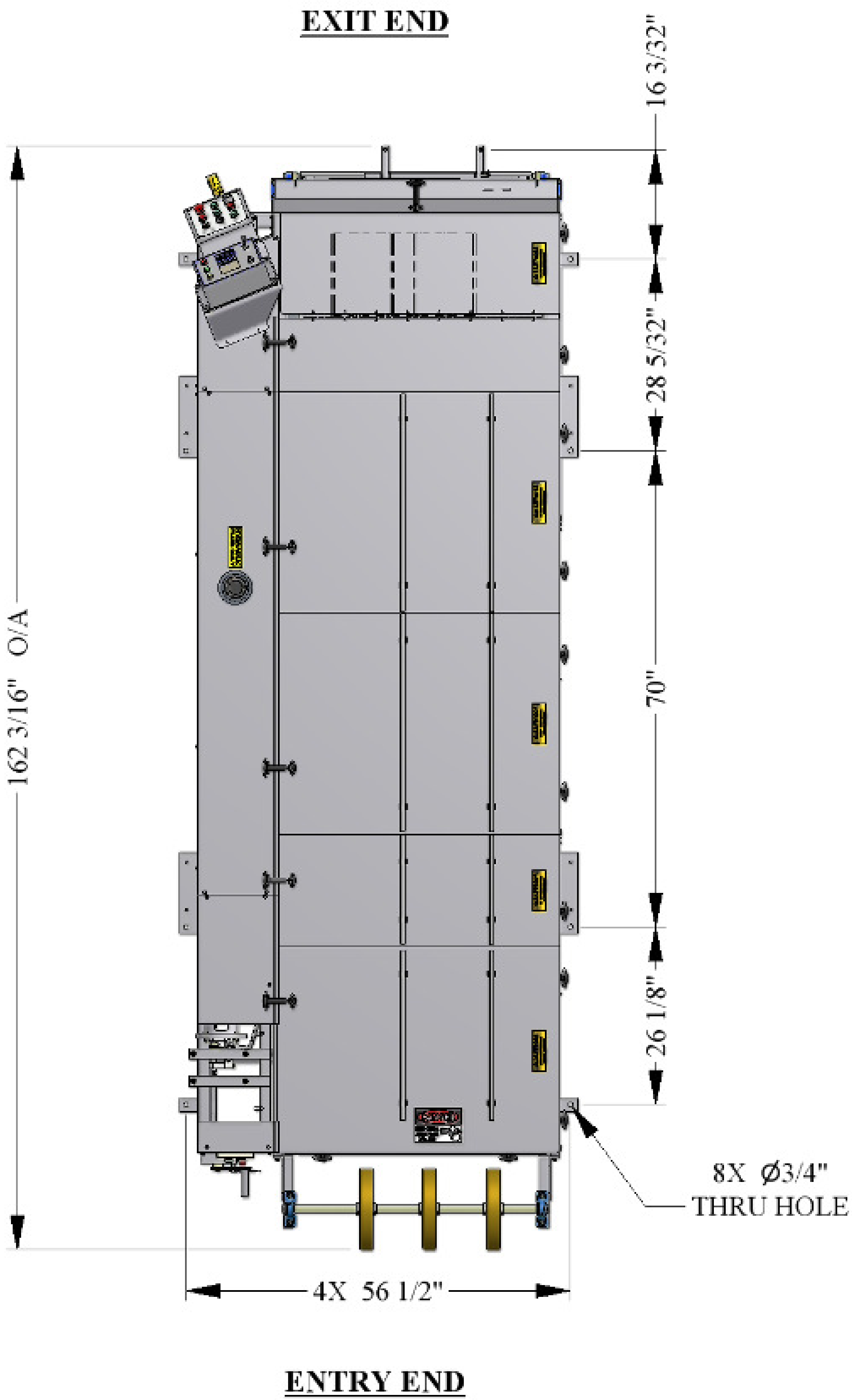



*Figure 2: Mounting Foot Detail*

CHAPTER 4

# GENERAL MAINTENANCE

## GENERAL MAINENANCE

**1.** Always keep covers on during operation and storage. The covers are for operator safety, but also protect the internal components of the machine from the environment.

**2.** Avoid storage of the machine outdoors for long periods of time. Cover your machine with a tarp to protect it but provide good ventilation to prevent condensation and rust.

**3.** Keep your machine clean. This will increase the life of the machine and make maintenance easier. A clean machine will provide a clean product.

**4.** Before operating your machine, visually inspect for foreign objects debris or anything unusual. If something doesn't seem correct, inspect and remedy prior to operation.

**5.** Keep chains properly tensioned. This will add to the life of the chains and sprockets. The chains should be just snug. An over-tightened chain is just as bad for the machine as a loose chain. Idler sprockets are provided on each chain for this purpose.

**6.** Lubricate the chains a minimum of every 40 hours of operation. It is preferable to use a dry motorcycle chain lube or equivalent.

**7.** Lubricate the 3 main drive gears a minimum of every 30 hours of operation. Use of an Open Gear Spray Lubricant is recommended. (Figure 17 & Figure 18 on page 28).

**8.** Keep Entry Guide Carriage (Figure 3 on page 7) clean and lubricate as needed Spray Lube.

**9.** Keep Bead Roller Carriage Shafts (Figure 21 on page 35) clean and lubricate with Spray Lube.

**10.** Lubricate 5 Acme Shafts (Figure 4 on page 8) with Spray Lube as needed.

**11.** Lubricate Mitre-Gears (Figure 4 on page 8) on ends of Acme Shafts with Spray Lube as needed.

**12.** Keep Arbor Cradles (Figure 11 on page 19) lubricated with Clear Grease.

**13.** Lubricate Arbor Nut (Figure 31 on page 42) using a grease gun with EP Grease when threads begin to look dry.

**14.** Clean Forming Rollers as needed with a Scotch Brite Pad and a small amount of solvent.

**15.** Clean Drive Rollers with soap and water or mild solvent free spray cleaner. **CAUTION: Do not use harsh chemicals or solvents or damage will occur.**

**16.** Lubricate both faces of the Shear Blades and Dies (Figure 19 on page 31) a minimum of once daily with Spray Lube. More should be added as needed before the cut edges begin to deteriorate.

CHAPTER 4

# GENERAL MAINTENANCE

## *Recommended Lubricants and Fluids*

**Spray Lube for:**
Shear Blades, Dies, Entry Guide, Bead Roller Carriage Shafts, Acme Shafts and Mitre Gears
**Super Lube - Multi-Purpose Synthetic Dri Film Aerosol Lubricant with Syncolon (PTFE)**
Catalog No. 11016
**11 oz. Aerosol Can**
**Available from:**
**MSC Supply at 1-800-645-7270**

**Clear Grease for:**
Arbor Cradles
Synthetic Extreme Pressure, High Temperature Grease with Syncolon (PTFE)
Catalog No. 71160
**400 gram container**
**Available from:**
**MSC Supply at 1-800-645-7270**

**EP Grease for:**
Arbor Nuts and Pillow Blocks
Grease - Lubricants Type: Moly Ep Grease
Catalog No. 11335
**14 Ounce Container**
**Available from:**
**MSC Supply at 1-800-645-7270**

**Open Gear Spray Lubricant for:**
Main Drive Gears
Open Gear and Wire Rope Lubricant
Catalog No. 00257659
**11 oz. Aerosol Can**
**Available from:**
**MSC Supply at 1-800-645-7270**

**Hydraulic Fluid (32AW) for:**
Hydraulic Tank
Various Manufacturers

# GENERAL MAINTENANCE

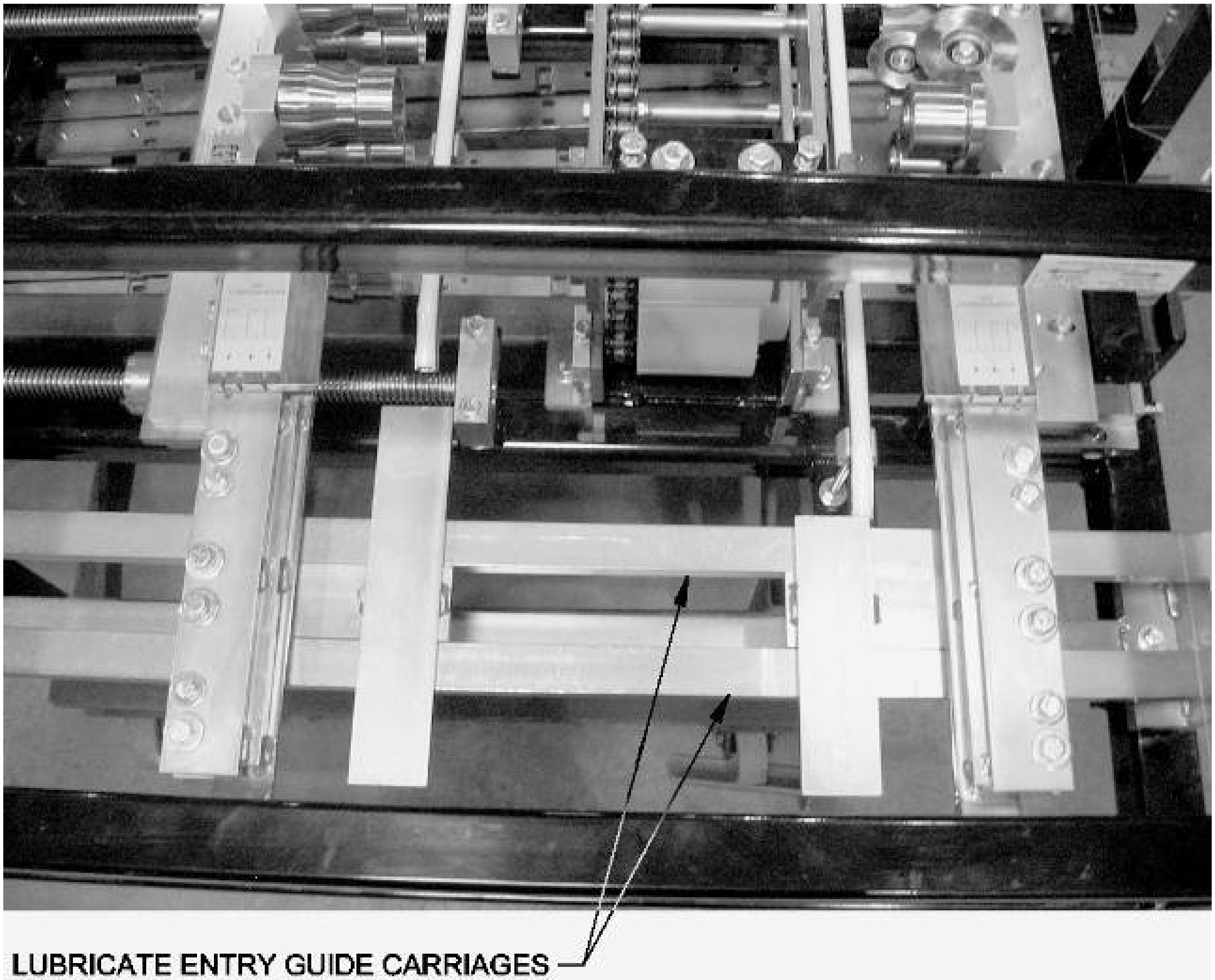



***Figure 3: Entry Guide***

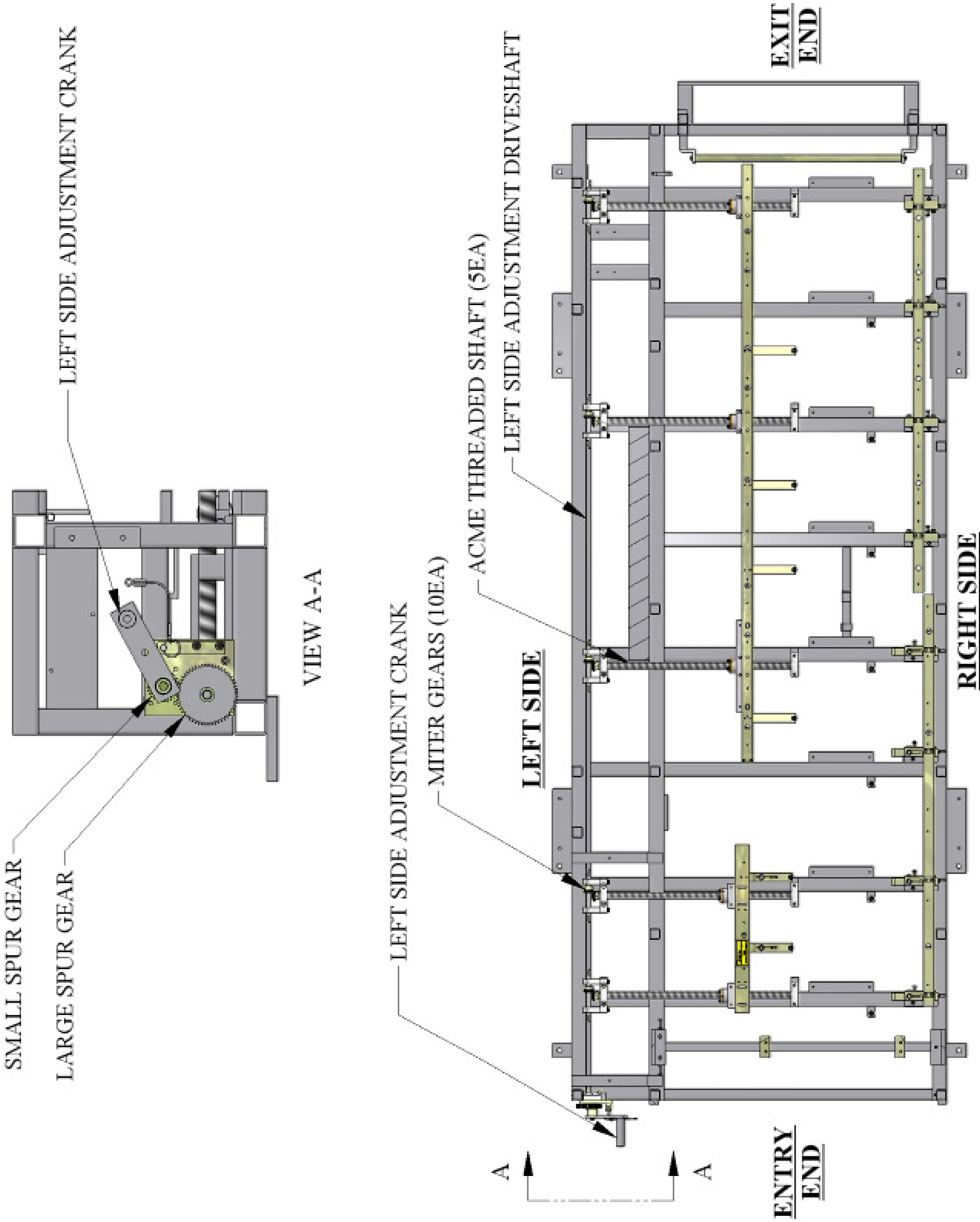



*Figure 4: Acme Shafts and Left Side Adjustment*

# ELECTRICAL CONTROLS AND OPERATION

## POWER CORD REQUIREMENTS

For machines equipped with a QCPP-E it is very important to follow the power cord requirement prescribed by the motor and electrical control manufacturers to maintain their respective warranties. Make sure the cord you are using is marked properly. Do not assume that because an extension cord looks heavy enough that it is the right gauge. **Use of the wrong gauge extension cord will void the warranty on motor and electrical controls.**

### GENERATOR USE FOR ELECTRIC MOTOR MACHINES

If a generator will be used to power the machine it must be large enough to handle the amp draw requirements of the motor. Contact your local generator supplier for proper sizing and refer to the specification plate on the electric motor. **Use of an improperly sized generator will cause a low voltage situation of the electric motor and controls which will void the warranty.**

## MANUAL CONTROL PANEL OPERATION:

(See Figure 5)

A. FORWARD-REVERSE Switch
This selector switch controls the direction of movement of the material through the machine. Select forward to feed material and run panel through the machine.
**NOTE: For operator safety, your machine will not run continuously in reverse.**

B. JOG-RUN Switch
This selector switch allows you to run the machine continuously, or jog material through the machine. Select JOG to load coil into machine and to move material through the machine in small increments until it clears the shear dies. Select run after material has cleared the shear, and you are ready to run panel.
**NOTE: The LENGTH CONTROL LIMIT SWITCH must be plugged in to the Limit Switch Plug at the bottom of the Manual Control Box Assembly to run continuously.**

C. START FEED (Green button at Entry and Exit End)
This button is used to activate the drive system of the machine. (Jog only unless limit switch is plugged in)

D. STOP FEED (Red button at Entry and Exit End)
This button acts as an emergency stop for the drive system when using the Length Control Limit Switch. **Pressing either the entry or exit button will stop the drive system of the machine in case of an emergency.**

E. SHEAR DOWN (Green button)
Pressing this button once will cycle the shear to the bottom of its stroke and return it back to the top or home position. This is one shear cycle

F. SHEAR UP (Red button)
Pressing this button during the down cycle of the shear will immediately send it back to the top or home position.

G. EMERGENCY STOP-POWER ON (Raised Red Mushroom button)

# ELECTRICAL CONTROLS AND OPERATION

**Function #1 (Power On)**
Pull this button OUT prior to starting the machine.
**Function #2 (Emergency Stop-Power Off)**
Once the machine is running, pushing this button in will stop all functions and completely shut down the machine including the engine. If the shear is in the down cycle it will freeze it in position. The shear will default back to the top or home position once the engine or motor is re-started. This button is also used to shut the machine down when not in use. ***Failure to push this button in prior to storage, even overnight, could result in a dead battery on gas engine models.***

H. MOTOR START (Green button)
**You must pull the Emergency Stop-Power On button out before the Start Button will function.**
Press this button momentarily to start the Electric Motor machine.
Press and hold this button until the engine starts on a Gas Engine model.

## MAIN CONTROL CABLE

(See Figure 6)

A. The main control cable is the communication cable for the Manual Control Panel described above and the PLC Computer Batch and Length Control Computer covered in Appendix B. This cable must be connected to one or the other in order for the machine to operate.
B. The Main Control Cable exits thru the panel below and under the left corner of the Manual Control Panel. There are three cables there and it is the larger diameter plug of the three. It has a key and slot configuration that must be aligned before the male/female connection can be made on the Manual Control Panel or Batch and Length Control Computer. This prevents misalignment and damage to the pins.

**Manual Control Panel Connection**
Connect the Female end of the Main Control Cable to the panel mounted male connection located at the bottom left corner of the Manual Control Panel. Make sure that the key and slot are aligned and carefully start the threads on the connection and turn clockwise until snug.

**Batch and Length Control Computer Connection**
Connect the Female end of the Main Control Cable to the panel mounted male connection located in the bottom of the computer on the right side. Make sure that the key and slot are aligned and carefully start the threads on the connection and turn clockwise until snug.

CHAPTER 5

# ELECTRICAL CONTROLS AND OPERATION

## REMOTE LIMIT SWITCH

(See Figure 7)

**Note:** Your machine will not run continuously in the forward direction unless the REMOTE LIMIT SWITCH is plugged into the machine. The Remote Limit Switch is used for panel length control. It is designed to attach to the right side of the optional RUN OUT TABLES available for your machine. Plug the female end of a 3-wire 14-gage extension cord into the limit switch, and the male end into the female Limit Switch Plug located at the bottom of the Control Panel Assembly. The length of the panel you intend to run determines length of the extension cord needed. Run out a panel to the desired length and stop the machine. Slide the Remote Limit Switch onto the bottom let of the angle on the right side of the run out table so that the ARM of the switch is against the end of the panel. Pull the limit switch back toward the shear until you hear a click in the Limit Switch Head and secure the limit switch at this location. Cut and remove the set up panel from the table. Push the start button and run the next panel allowing the limit switch to stop the machine. Measure this second panel before cutting to determine if it stopped in the correct position and make the necessary adjustment to the limit switch to obtain the desired length. Repeat as necessary.

## FUSES

(Figure 8)

All machines, gas or electric powered, have a 10-amp time delay fuse inside the Electrical Control Panel Assembly. This fuse protects the electrical components. If the fuse is blown, you will lose all functions of the machine except Motor Start. **To replace this fuse:** Loosen all 4 cover screws and open the front panel of the Control Box. Locate the automotive style in-line fuse near the bottom right hand corner. It is a spring loaded twist lock holder. Push together and turn to open. Check the fuse with a continuity tester. If it is bad, replace with a new fuse and re-connect spring loaded holder.

## ELECTRIC MOTOR MACHINES

(Figure 9)

Electric motor machines have an additional 10-amp time delay fuse protecting the logic circuit of the Contactor Box. This fuse holder is mounted in the side or top cover of the contactor box located approximately mid machine on the right side. Access can be gained by removing the center left side cover. This is a panel mounted, spring loaded fuse holder. **To replace this fuse:** Push in on the cap and turn counterclockwise to release fuse. Check fuse with a continuity tester. If the fuse is bad replace with a new fuse. To re-install, insert fuse into cap. Install fuse and cap assembly into receptacle, push down and turn clockwise to lock in place.

CHAPTER 5
# ELECTRICAL CONTROLS AND OPERATION

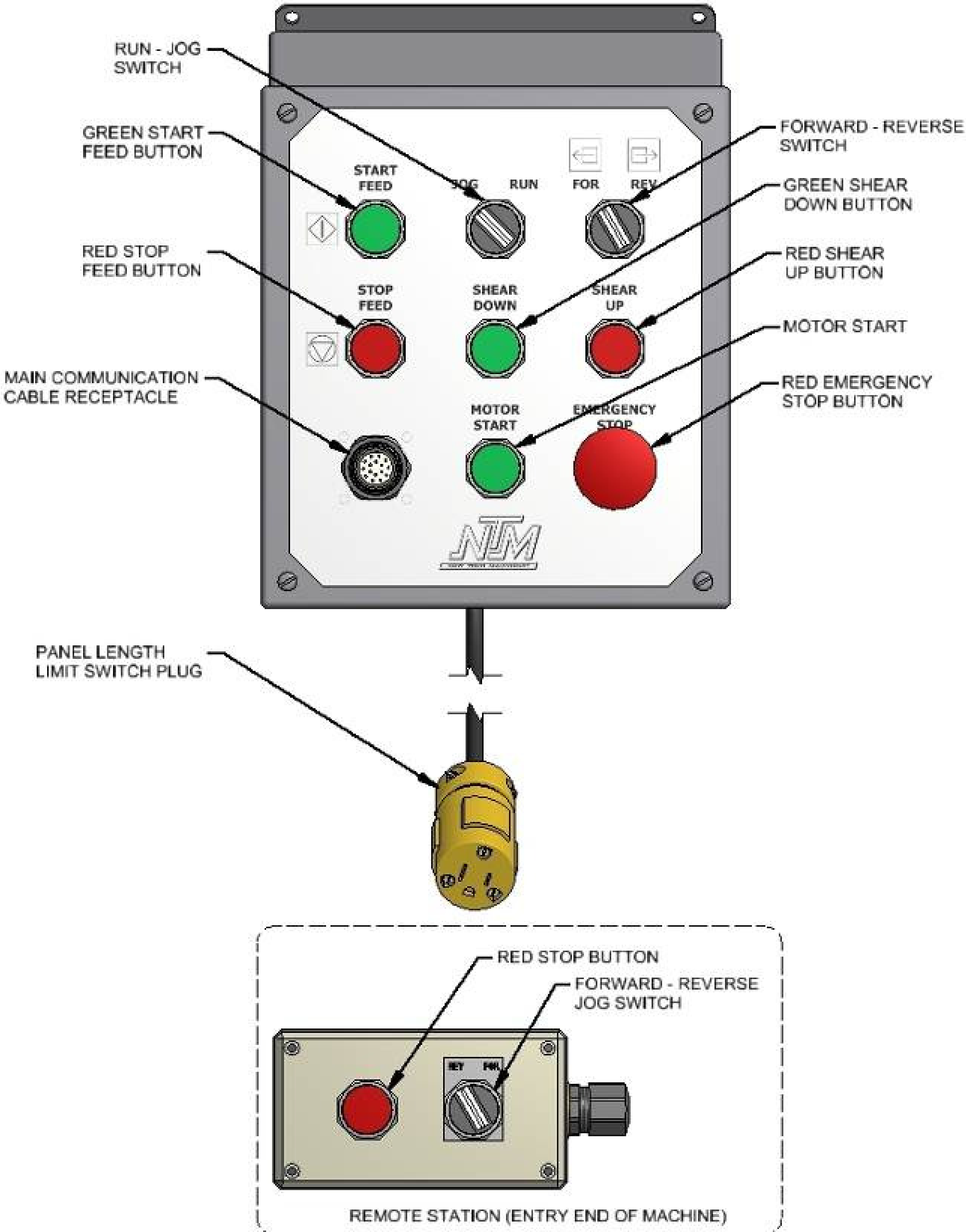



***Figure 5: Controls***

CHAPTER 5

# ELECTRICAL CONTROLS AND OPERATION

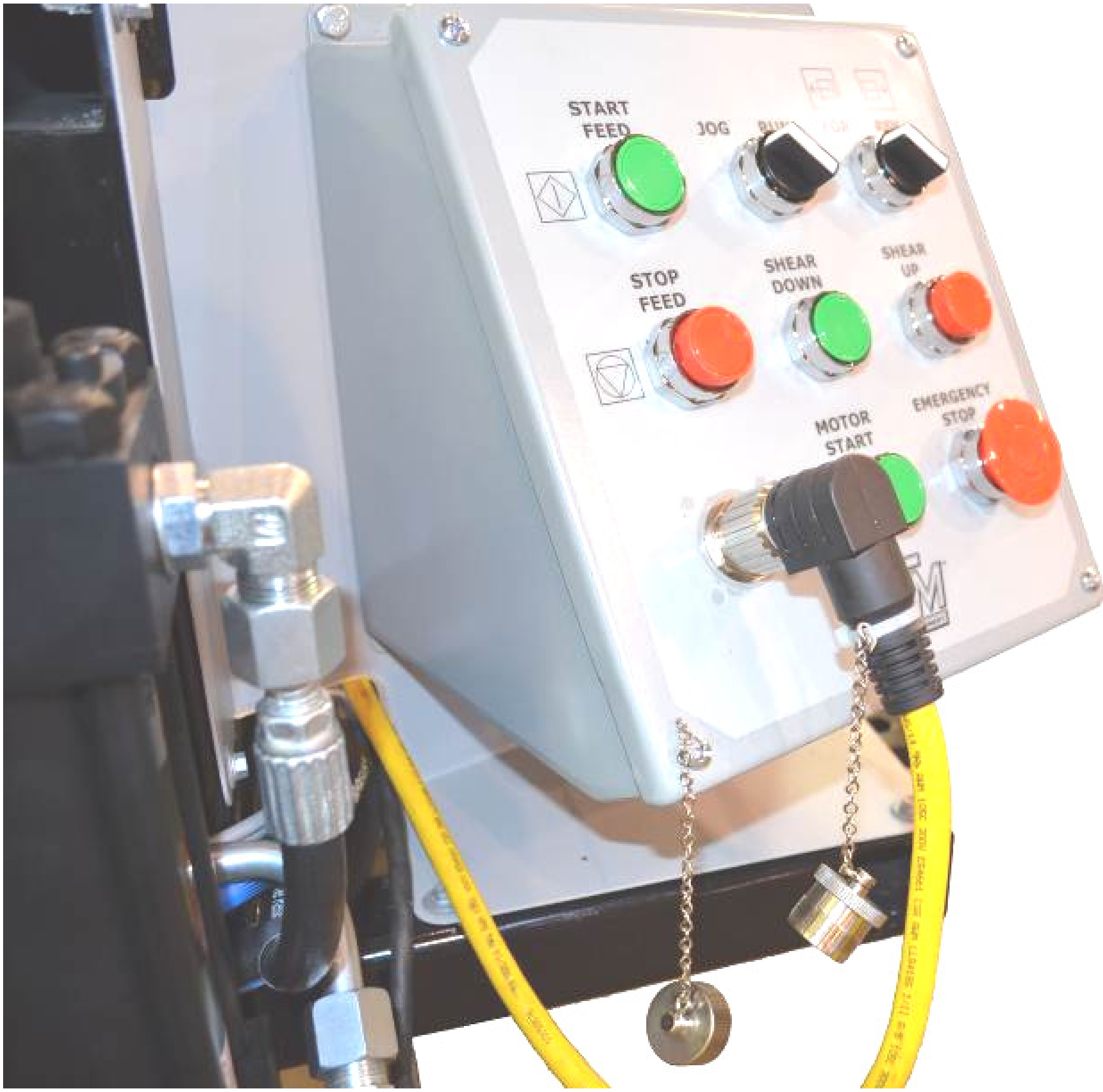



***Figure 6: Main Control Cable***

# ELECTRICAL CONTROLS AND OPERATION

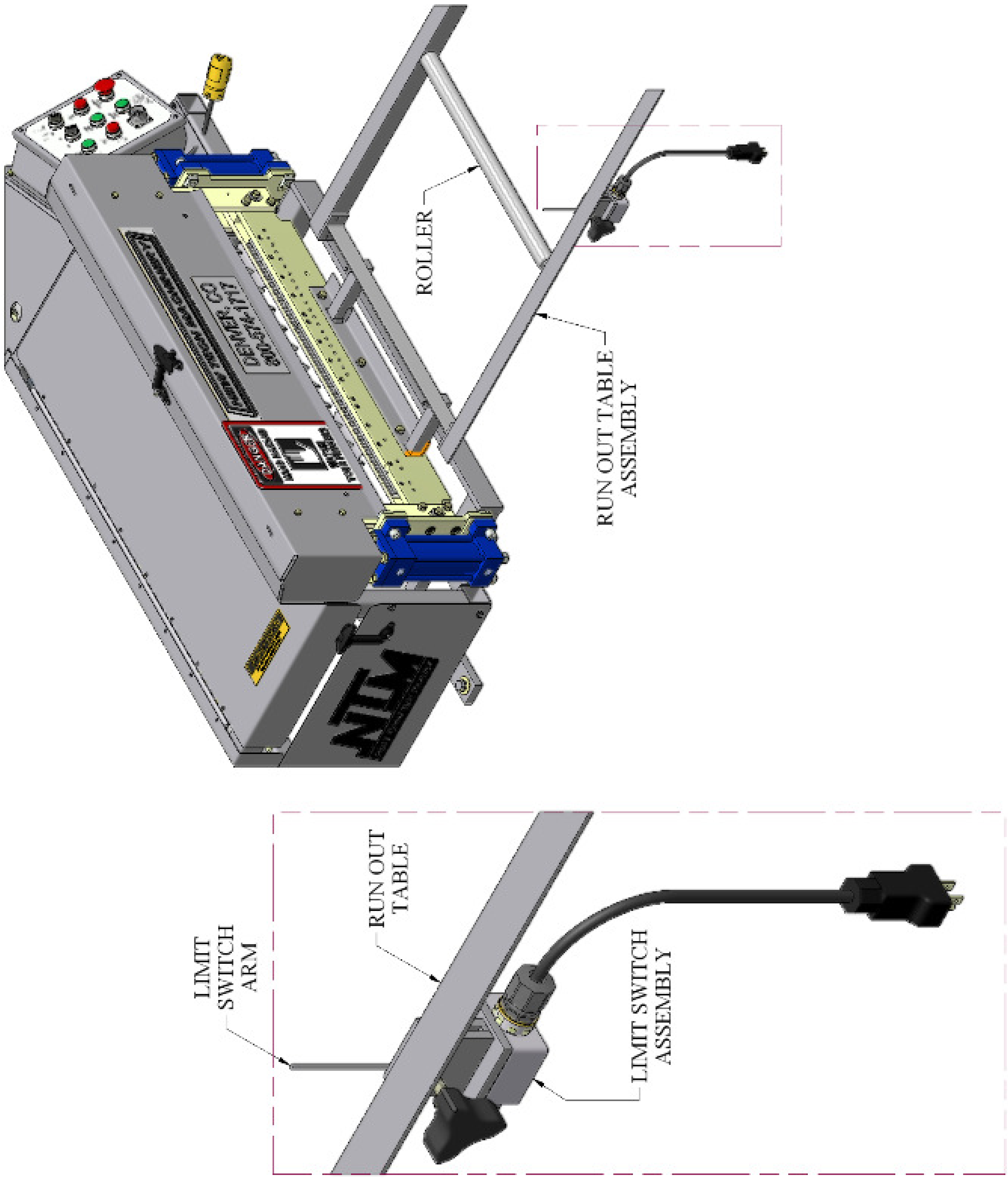



***Figure 7: Run Out Table and Remote Limit Switch***

CHAPTER 5

# ELECTRICAL CONTROLS AND OPERATION

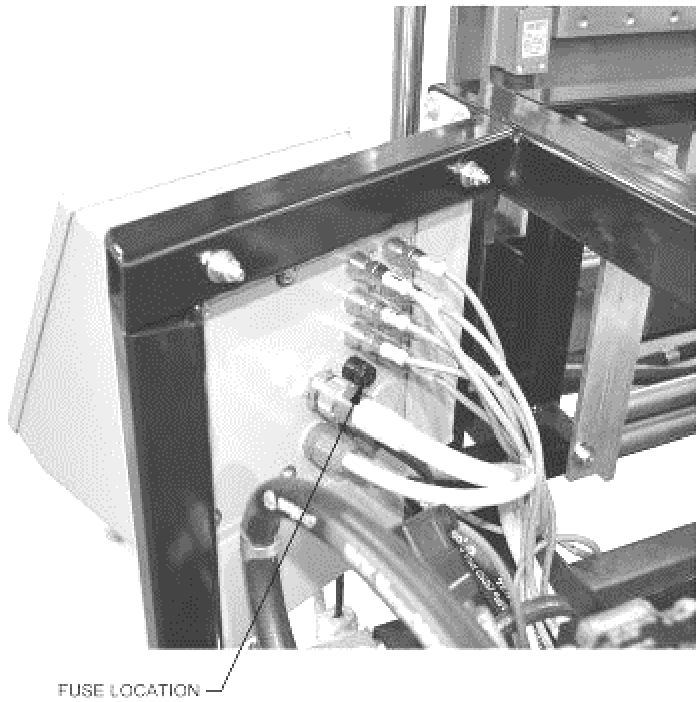



***Figure 8: Main Control Box Fuse***

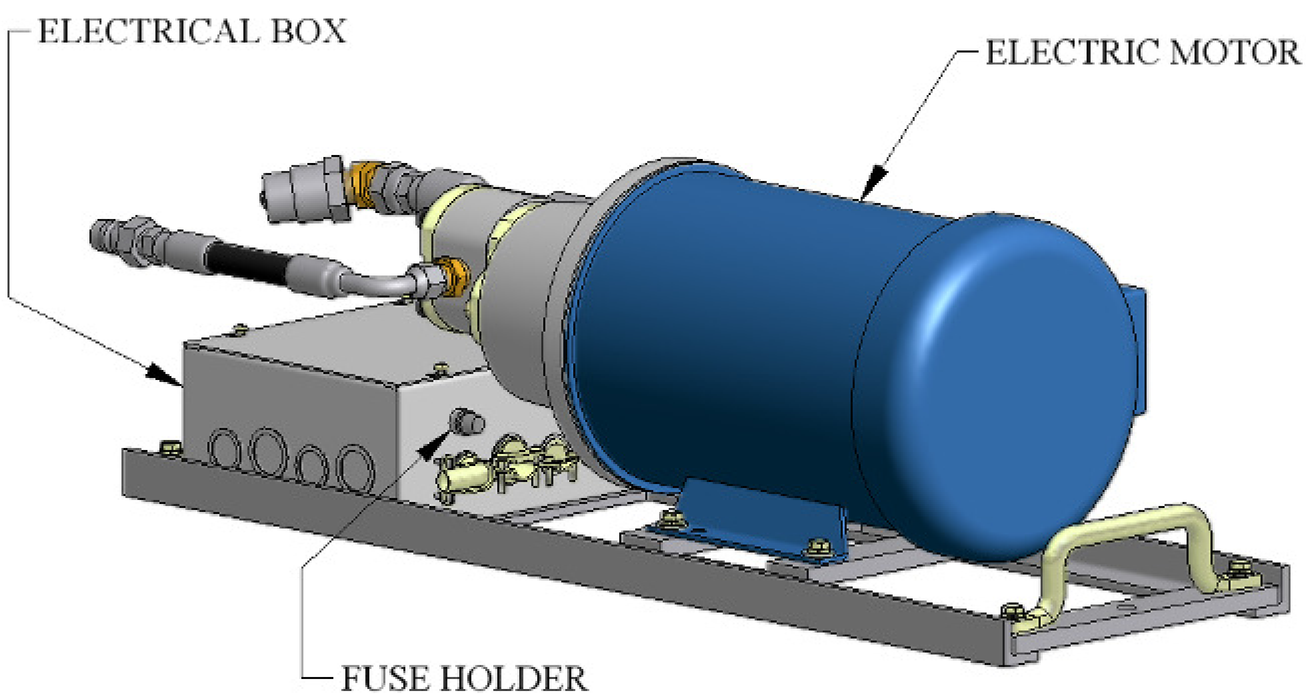



***Figure 9: QCPP E 1-6 Fuse Location***

# REEL STANDS, REELS AND EXPANDABLE ARBORS

## EXPANDABLE ARBOR

(Figure 10)
The Expandable Arbor adjusts to accommodate coils with 16" to 20" inside diameters by expanding into the ID of the coil.

## THREADED NUT

The threaded nut should always be on the right side of the machine and the tail of the coil should always be routed over the top and pointing toward the exit or shear end of the machine.
This threaded nut is used to increase or decrease the outside diameter of the arbor. Turning the nut clockwise will increase the outside diameter of the arbor, and counter-clockwise rotation will decrease the arbor size. There is a grease zerk in the collar of the threaded nut that should be lubricated at least twice a year, or whenever grease in not visible on the threads of the shaft.

## END COLLAR

The End Collar has two positions.
Position "A" is used for coils with inside diameters of 16".
Position "B" is used for coils with inside diameters of 20".

To adjust from one position to the other, remove 2 screws "C" until end collar is free to slide. Slide it to the inside position for 20" ID or outside position for 16" ID coil. Align it to the respective threaded holes in the reel shaft. Re-insert and tighten "C" bolts to lock the end collar to the shaft.

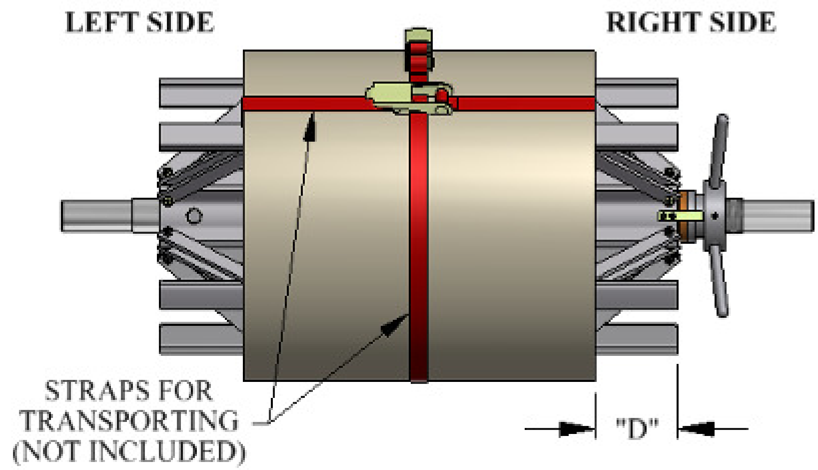
## LOADING EXPANDABLE ARBORS WITH COIL

1. Using the Threaded Nut, collapse the arbor small enough to fit into the inside diameter of the coil.
2. Slide the Expandable Arbor into the center of the coil <u>making sure the threaded nut is on the right and the tail of the coil is over the top and pointed toward the exit end of the machine.</u>
3. Turn the Threaded Nut clockwise until the Support Bars on the arbor are just snug against the inside of the coil.
4. Using the Reel Set Up Chart, (Figure 10), find the "D" dimension that corresponds to the profile you are using.
5. Slide the arbor left or right to get the correct "D" dimension measuring from the edge of the coil to the end of the Support Bar on the Threaded Nut side.
6. Finish by rotating the Threaded Nut clockwise until the Support Bars are very tight against the inside of the coil. Verify that dimension "D" is correct, and re-adjust if necessary. The Coil and Arbor are now ready for loading. (see LOADING REELED COIL on page 20)

CHAPTER 6

# REEL STANDS, REELS, AND EXPANABLE ARBORS

| SET-UP CHART | |
|---|---|
| PROFILE | "D" |
| BP | 3-1/4" |
| FF100 | 1-5/8" |
| FF150 | 5/8" |
| SS100 | 2-3/8" |
| SS150 | 1-7/8" |
| SS200/210A | 7/8" |
| SS450/450SL | 7/8" |
| SS550 | 1" |
| SS675 | 1/4" |



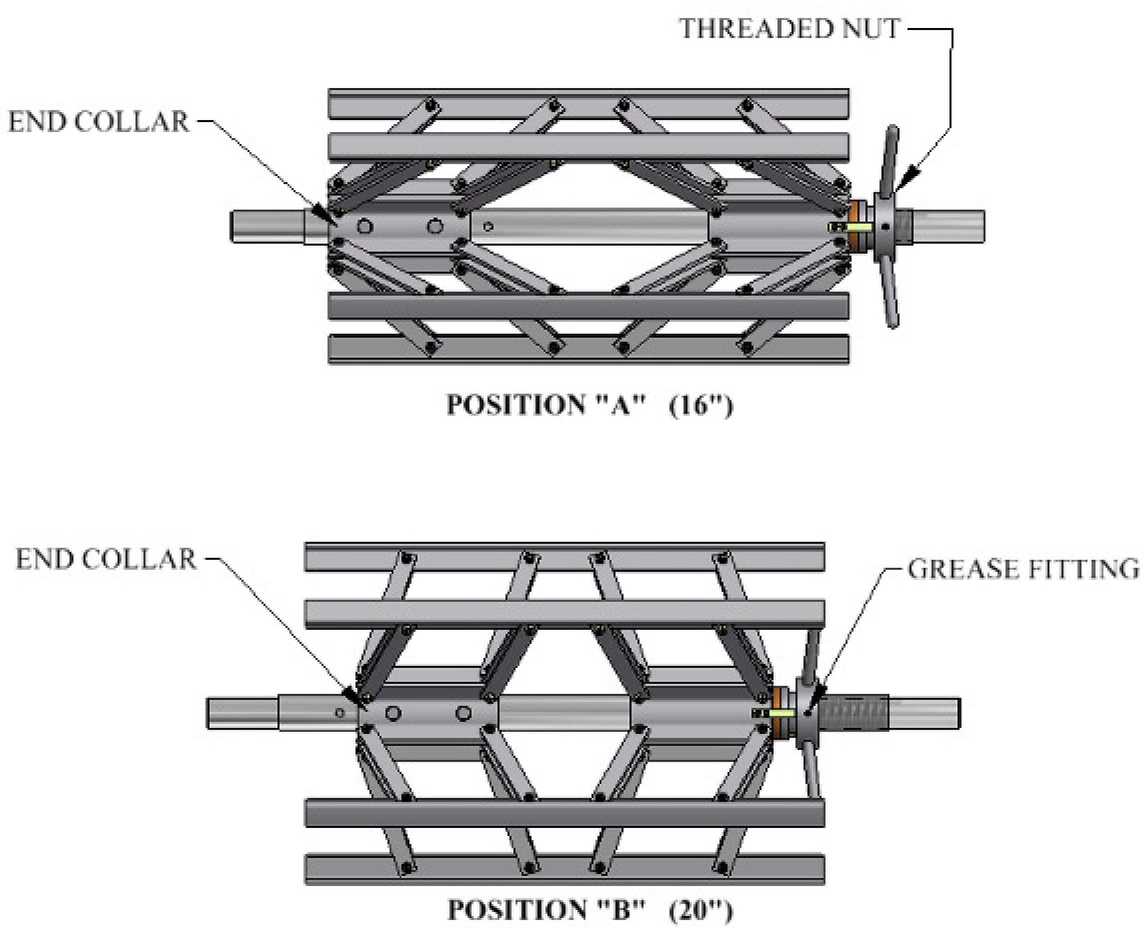




*Figure 10: Expandable Arbor Set-Up*

CHAPTER 6

# REEL STANDS, REELS, AND EXPANABLE ARBORS

**CAUTION: Always use properly rated lifting devices to load and unload coils.**

Maximum Capacity / Reel: **3,000 lbs.**

Total Capacity for Reel Stand: **6,000 lbs.**

1. The reel shafts must rest in the cradles on the reel rack. Keep the cradles lubricated with synthetic lube to minimize wear. (Figure 11)
2. Use the Hold Down Bars on each cradle to secure the coil and reel to the reel stand during both operation and transit of the machine. The Hold Down Bracket should be used to keep the coil from uncoiling too fast during the fabrication of panels. Apply just enough drag to keep coil tensioned. (Figure 11)
   **Caution: Do not over tighten Hold Down Bars during machine operation.** This will cause excessive load on the drive and electrical systems and premature failure will result. **Do tighten Hold Down Bars** tightly prior to transport of the machine.
3. If a Remote Decoiler is used it should be placed 8 to 10 feet behind the machine. Align it as close as possible to the Right Side Entry Guide line of fire, making the side of the coil and reel parallel to the machine. NOTE: The closer the Decoiler and reel are set to the machine, the more critical this alignment becomes.

# REEL STANDS, REELS, AND EXPANABLE ARBORS

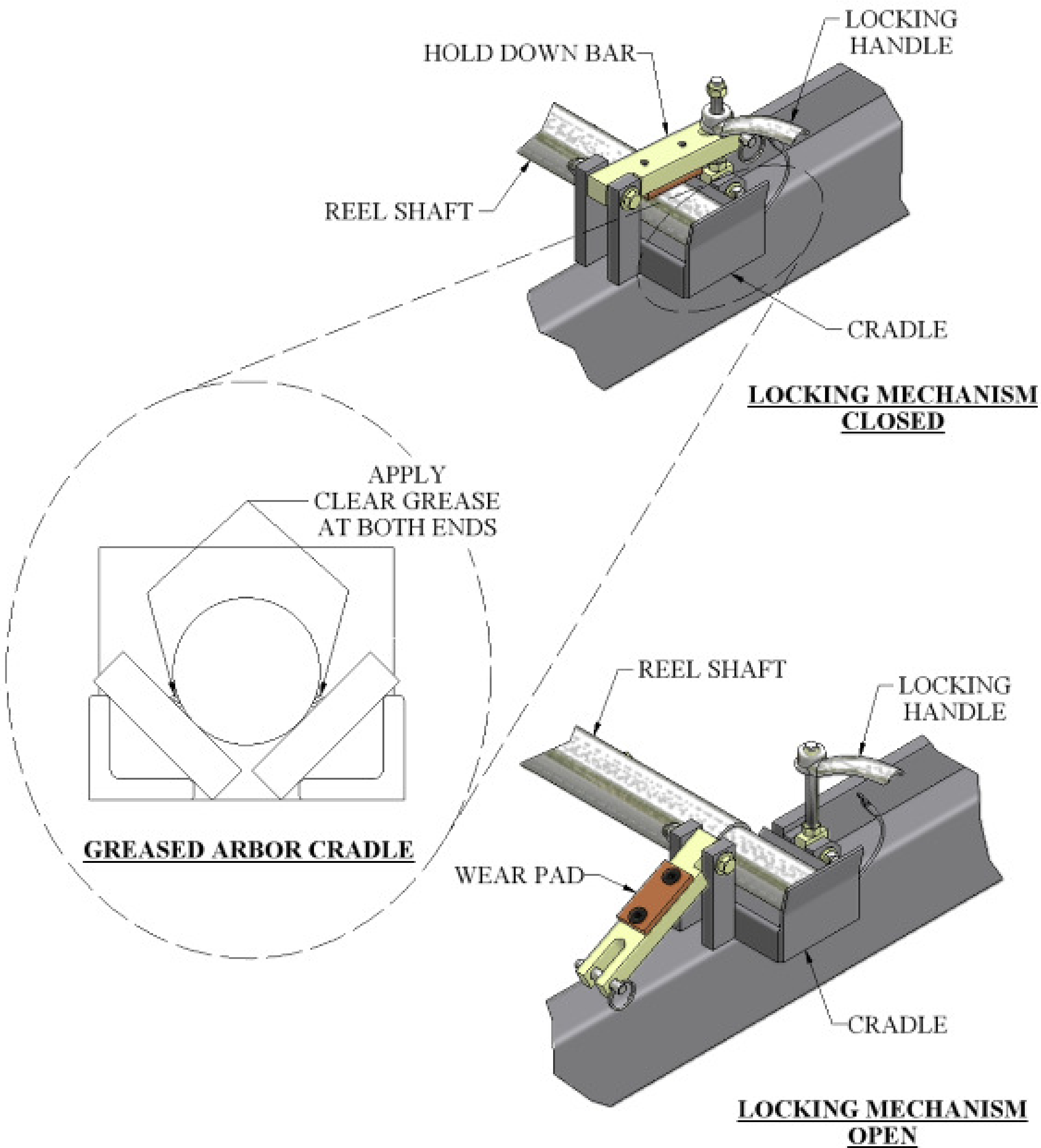



***Figure 11: Expandable Reel Assembly***

CHAPTER 6

# REEL STANDS, REELS, AND EXPANABLE ARBORS

## LOADING REELED COIL

**Caution:**
**Always use a forklift or other approved lifting device to load or unload Fixed Reels or Expandable Arbors loaded with coil.**
**The Lifting Holes in the Fixed Reel sides are provided to make loading safer and easier.**
**<u>DO NOT</u> use lifting straps through the lifting holes as the sharp edges may cut the straps.**

1. Prepare the reel stand by making sure the Hold Down Bars are in the unlocked and open Position (Figure 11).
2. Using an approved lifting device, lift the reeled coil into the cradles on the reel stand making sure that the tail of the coil is in the correct position (Figure 12) then remove the lifting device.
3. Rotate the Hold Down Bars (Figure 11) to the closed position and thread the handle onto the hold down bolt. If you are going to run panel from this coil, tighten the left and right handle just snug. Final adjustment of tension should be made while running a panel to keep reel from unwinding material too fast. As the coil becomes smaller, re-adjustment will need to be made. **Caution: Do Not over tighten Hold Down Bars. Drive and/or electrical system failure may occur.**
4. If you are going to transport the machine after loading coil, tighten the Hold Down Bars securely to keep coil from unwinding during transport, and secure the loose end of the material to the coil.
5. Before transporting the loaded Expandable Arbor, you should also secure the coil around the outside edges through the inside diameter using a strap, rope, etc. to prevent the coil from telescoping (Figure 10).

**NOTE: Make sure Hold Down Bars are tightened securely and coil is properly tied off before transporting machine.**

CHAPTER 6

# REEL STANDS, REELS, AND EXPANABLE ARBORS

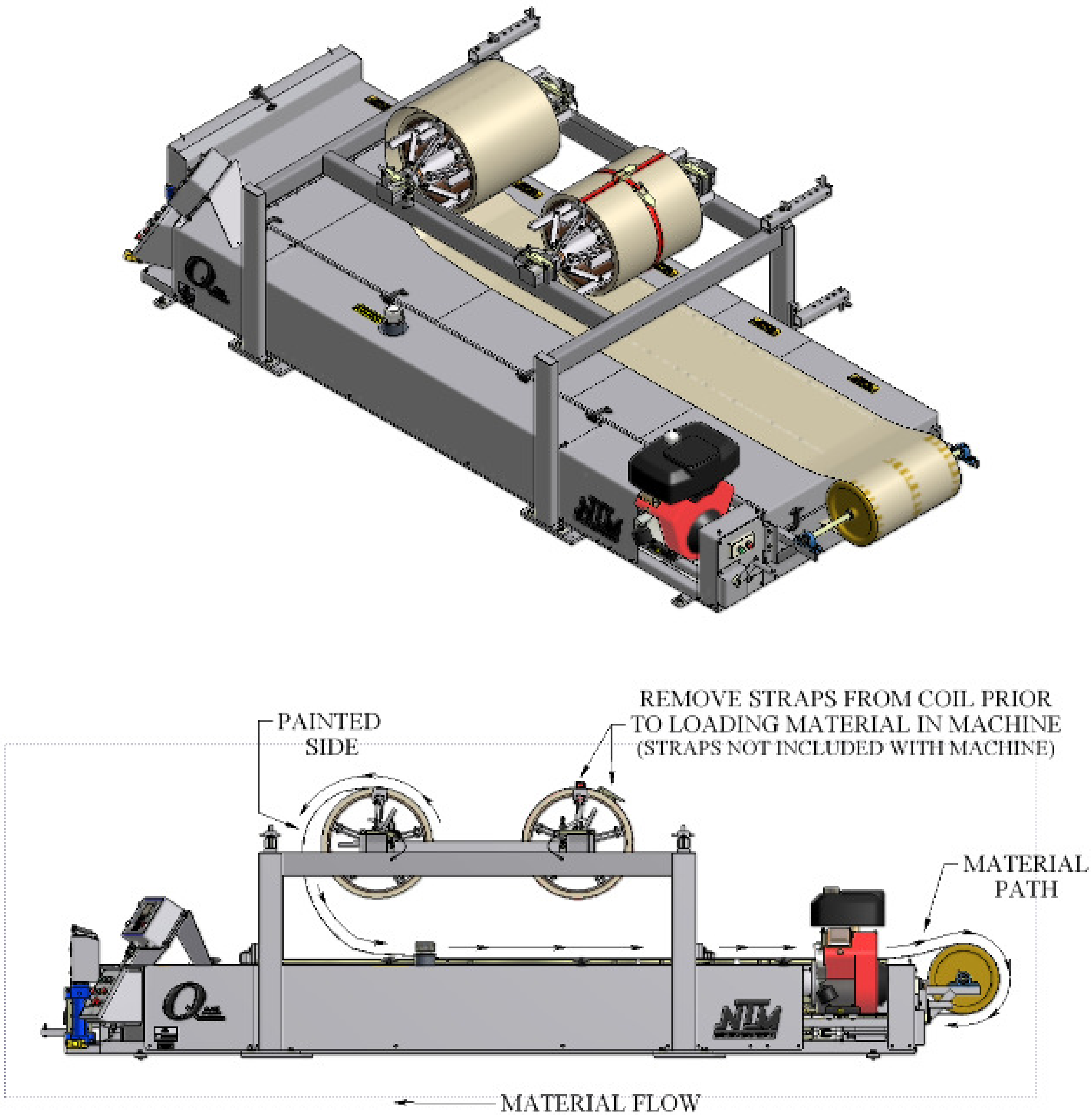



***Figure 12: Material Routing***

# HYDRAULIC SYSTEMS

## *Maintenance*

(Figure 13)
The hydraulic system for your machine is a very durable and reliable system. It must be properly maintained to ensure trouble free operation and longevity. The factory has installed a 32 weight AW hydraulic fluid. Because this equipment is used primarily outdoors and exposed to the elements, it is recommended that the oil be changed annually. Hydraulic oil will degrade if it remains stagnate in the system for long periods of time. Check the fluid level weekly. It should be approximately 5" below the top of the filler neck. When checking the fluid level, also note the color and condition of the fluid. It should be clear in color.

## *Hydraulic Fluid Troubleshooting*

| | CONDITION | SOLUTION |
|---|---|---|
| 1 | White milky color indicates water contamination. | Change the fluid. |
| 2 | Dark fluid usually indicates a dirty oil filter. | Replace the oil filter. |
| 3 | Foamy fluid will cause a noisy pump and slow erratic operation of the system. The cause is usually low oil level or air in the system. | Check fluid level and bleed off air by pushing the shear down button and holding for 10 seconds. |
| 4 | Machine runs slow after continuous operation. Check hydraulic fluid temperature, it should be no more than 140°F (60°C). | Allow to cool down. Move to a shaded area if possible. |

## *Changing Hydraulic Fluid and Filter*

(Figure 14 & Figure 15)
The hydraulic fluid should be changed at least once a year. More frequently if the machine is constantly in operation in a dusty environment or if the fluid becomes contaminated. To change the fluid:

1. Remove the Left Side Covers and set aside.
2. Locate the Drain Hose "A" coiled up behind the Hydraulic Filter "B" and the Drain Valve "C" located on the bottom of the Hydraulic Tank "D" on the Filter end of the tank.
3. Remove Filler Cap.
4. Uncoil Drain Hose and hang over the side of the machine and trailer.
5. Place a container under the hose to catch the old fluid.
6. Open the Drain Valve and drain the fluid into the container. Discard of Properly.
7. Loosen, remove and discard the used Hydraulic Filter.

**8.** Re-install the new hydraulic filter and fill the tank with fresh 32 weight fluid until it is 5" **below the top of the Filler Neck "F"** (approximately 18 gal).

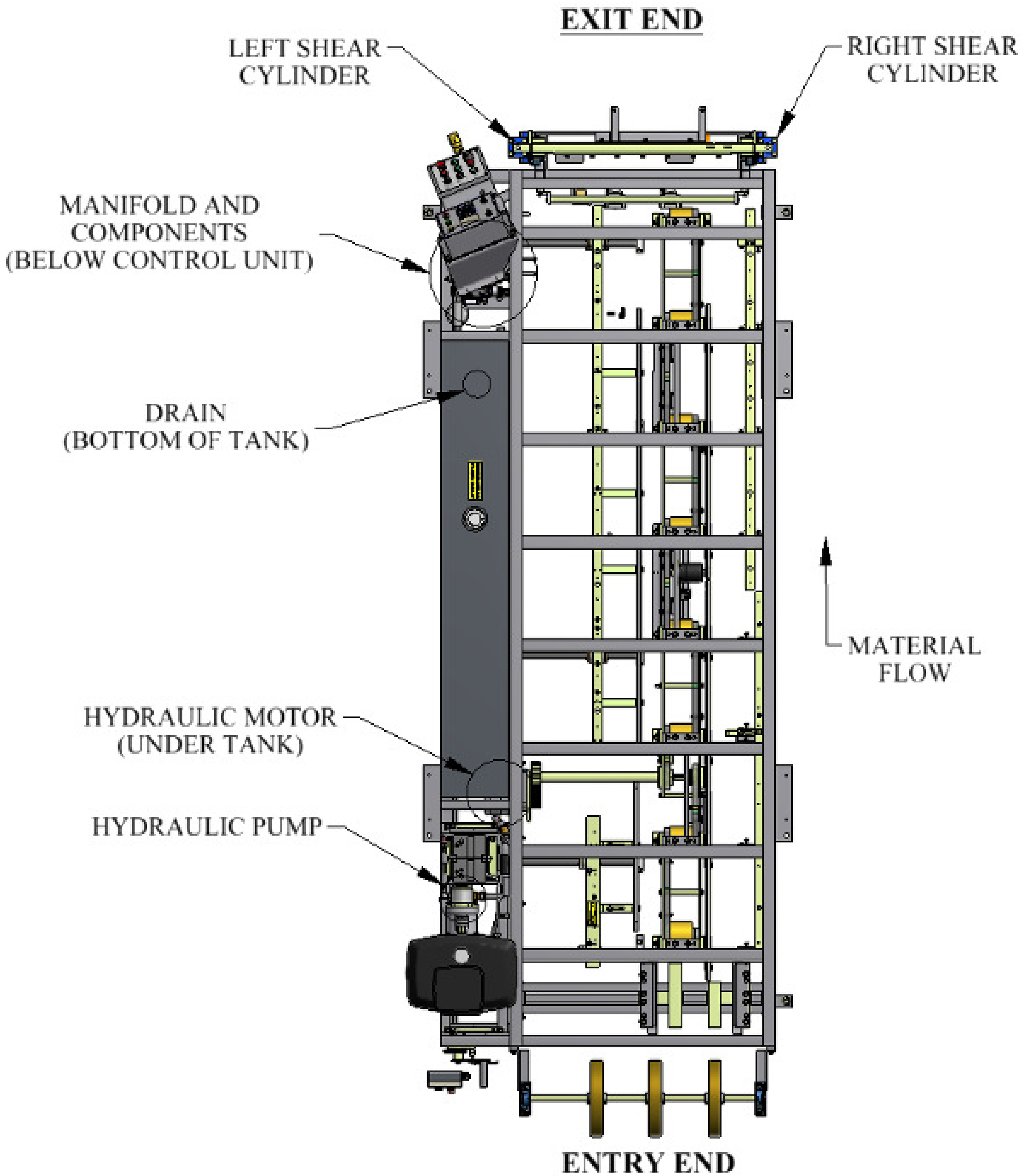



***Figure 13: Hydraulic System – Overview***

# CHAPTER 7
# HYDRAULIC SYSTEMS

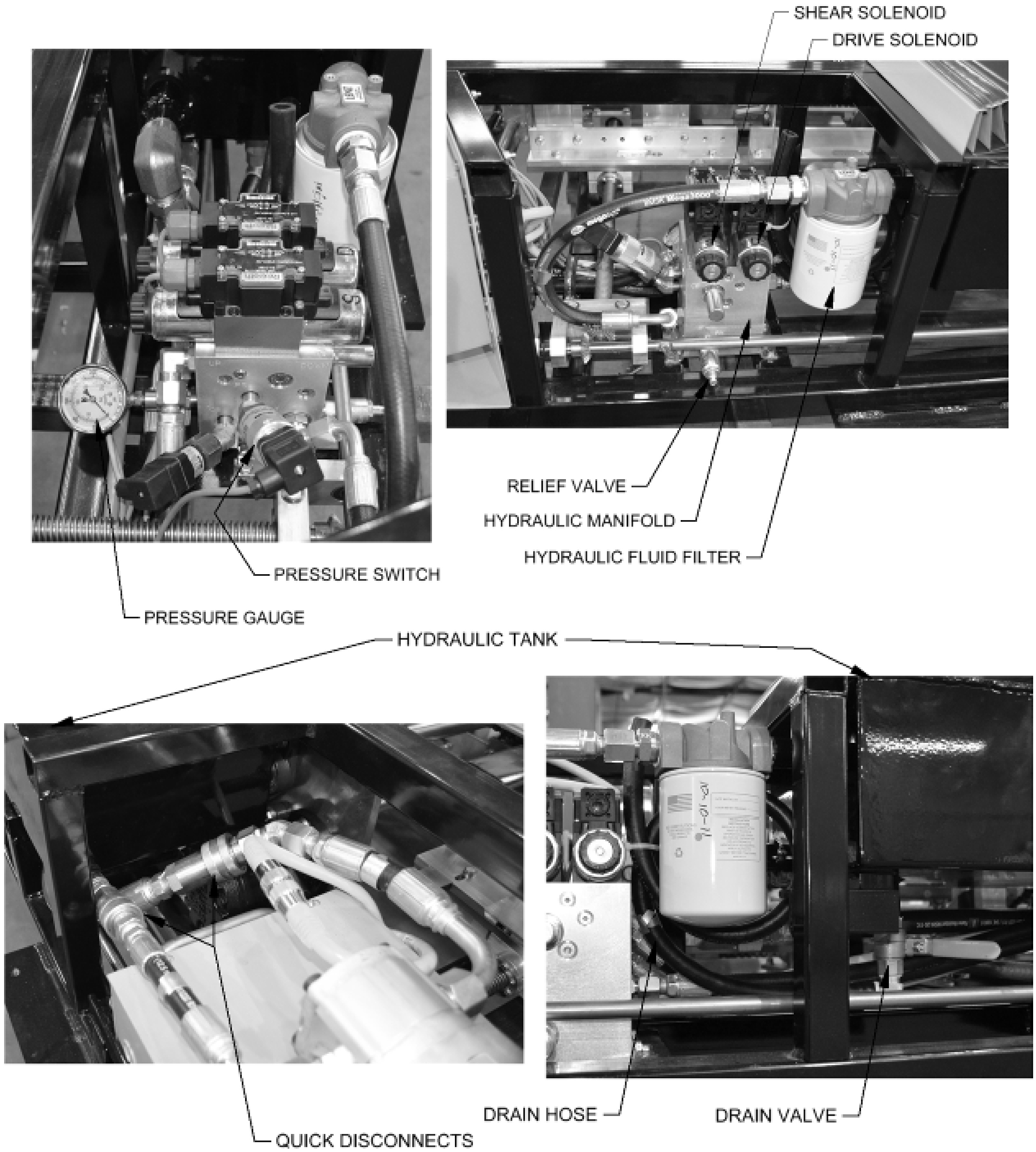



***Figure 14: Hydraulic System – Details***

# HYDRAULIC SYSTEMS

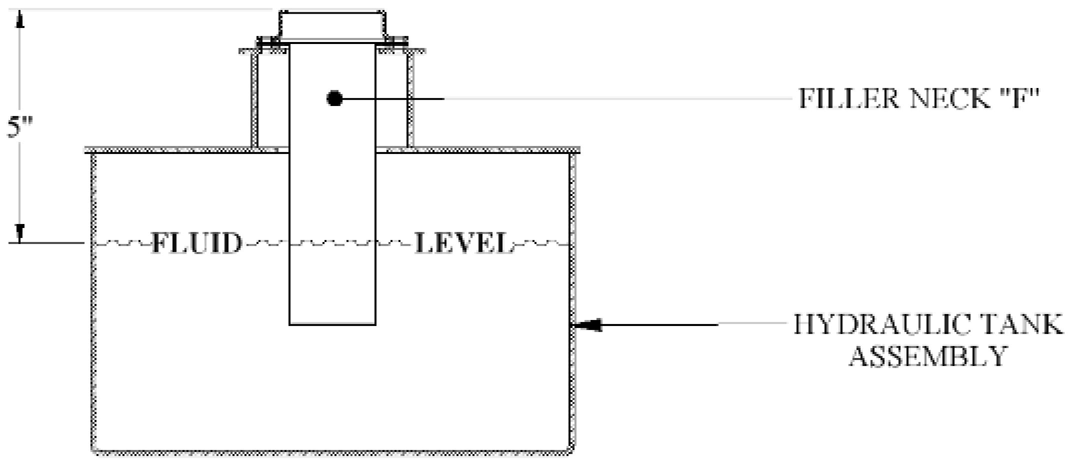



*Figure 15: Hydraulic Fluid Level*

CHAPTER 8
# DRIVE SYSTEM

## DRIVE SYSTEM

(Figure 16, Figure 17 & Figure 18)
The drive system of your machine consists of eight top and eight bottom polyurethane drive rollers. They are divided into groups of 2 per assembly making 4 Top Drive Roll Assemblies and 4 Bottom Drive Roll Assemblies. They are connected together via chain and sprocket and there are chain tensioner's on each assembly. The drive system is powered by a hydraulic motor which transfers power to the drive assemblies using spur gears and a top and bottom drive shaft.

**1.** Clearance between the top and bottom drive rollers is factory set at ¾ of a turn of pressure past the point of contact. This will drive material up to 22ga. though the machine without the need for adjustment. If adjustment becomes necessary due to slippage, you can add pressure. **Do not add more than ¼ turn beyond the factory setting.** It is important to adjust only one end of each assembly at a time to maintain side to side alignments.
**To add pressure:** Loosen two Lock-Down Bolts "B" 1/8 of a turn. Loosen lock nuts on two corresponding Jack Bolts "A". Tighten Bolts "A" 1/8 of a turn. Re-tighten 2 lock nuts on Jack Bolts "A" to lock in adjustment. Repeat this procedure on the other end of the Drive Assembly and repeat for the other 3 drive assemblies. Test for result and repeat one more time if necessary.
**To remove pressure:** Loosen two lock nuts on Jack Bolts "A". Loosen two Jack Bolts "A" 1/8 of a turn. Tighten two corresponding Lock-Down Bolts "B" 1/8 of a turn. Tighten two lock nuts on Jack Bolts "A" to lock in adjustment. Repeat this procedure on the other end of the Drive assembly.

**2.** There are three different chain tensioners on your machine.
A. The first are located in slots on the side plates of the Drive Roll Assemblies. They follow the chain locations alternating from one side to the other. To adjust, slightly loosen the nut on the bolt holding the tensioner sprocket in place. Using a dead blow hammer tap the tensioner assembly toward the drive roller until the chain is snug. Lock into position by tightening the bolt on the assembly.
B. The second type is similar. These are located on the top and bottom spreader bars located between the Drive Roll Assemblies. These are used in the same way except there is a bolt located in the edge of the slot on the assembly used to push the tensioner assembly toward the Drive Roller to tension the chain.
C. The third is located on the Top #1 Spreader Bar between the sprocket and drive roller. (see detail 'A" Figure 18) Loosen two "D" bolts enough so that you can move the tensioner assembly up toward the chain until snug. Re-tighten the two "D" bolts.

**3.** The chains used in this system are #50 Roller Chain. See Figure 18for chain locations and lengths if chain replacement is necessary.

**4.** The polyurethane drive rollers will eventually need cleaning. This will become evident when they start leaving a stripe the width of the drive roller on the formed panels that doesn't come off easily or if you run material with an oily film on it. Avoid cleaning the drive rollers with harsh chemicals or solvent. These products will attack the polyurethane and cause irreversible damage. **Use of these products will void the warranty on the drive rollers.**

Clean the rollers with mild soap and water and a rag. **Caution must be taken around the moving parts of the machine during the cleaning process.**

**5.** Covers should be kept on the machine during operation and storage. Ultraviolet light will attack the polyurethane drive rollers and cause deterioration. Again, this type of damage is not covered under the warranty.

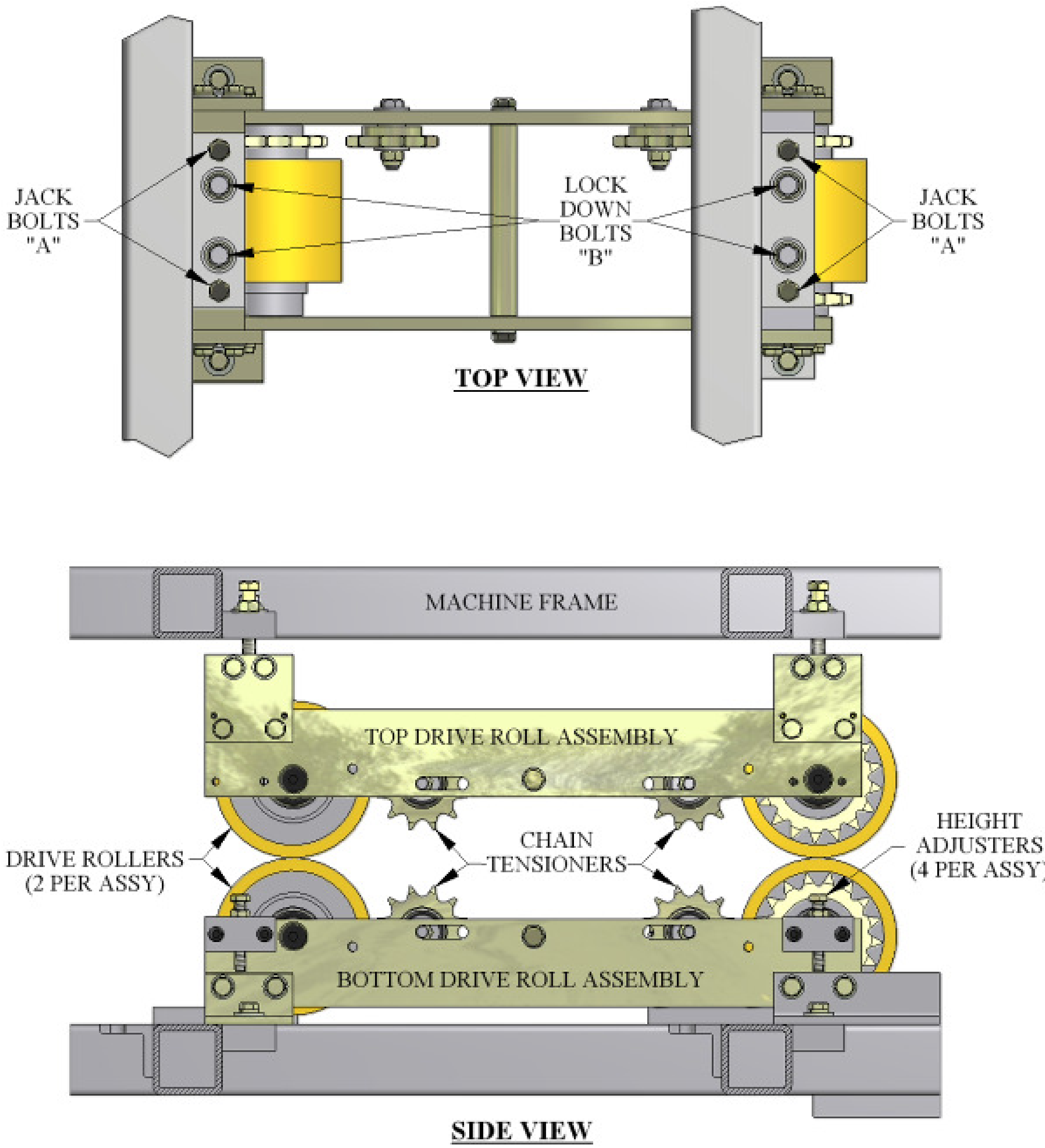



***Figure 16: Drive Roll Assembly View***

CHAPTER 8
# DRIVE SYSTEM

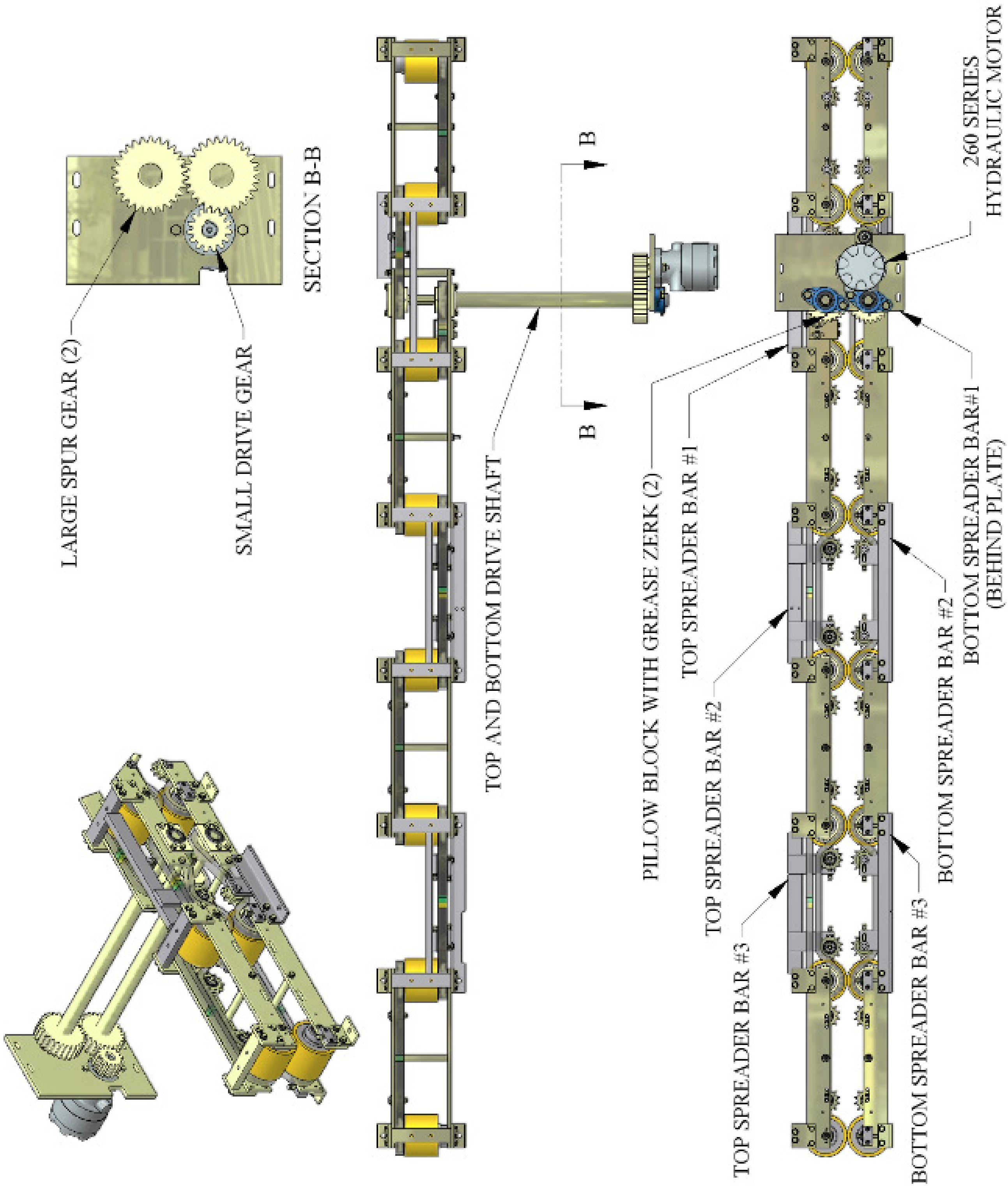
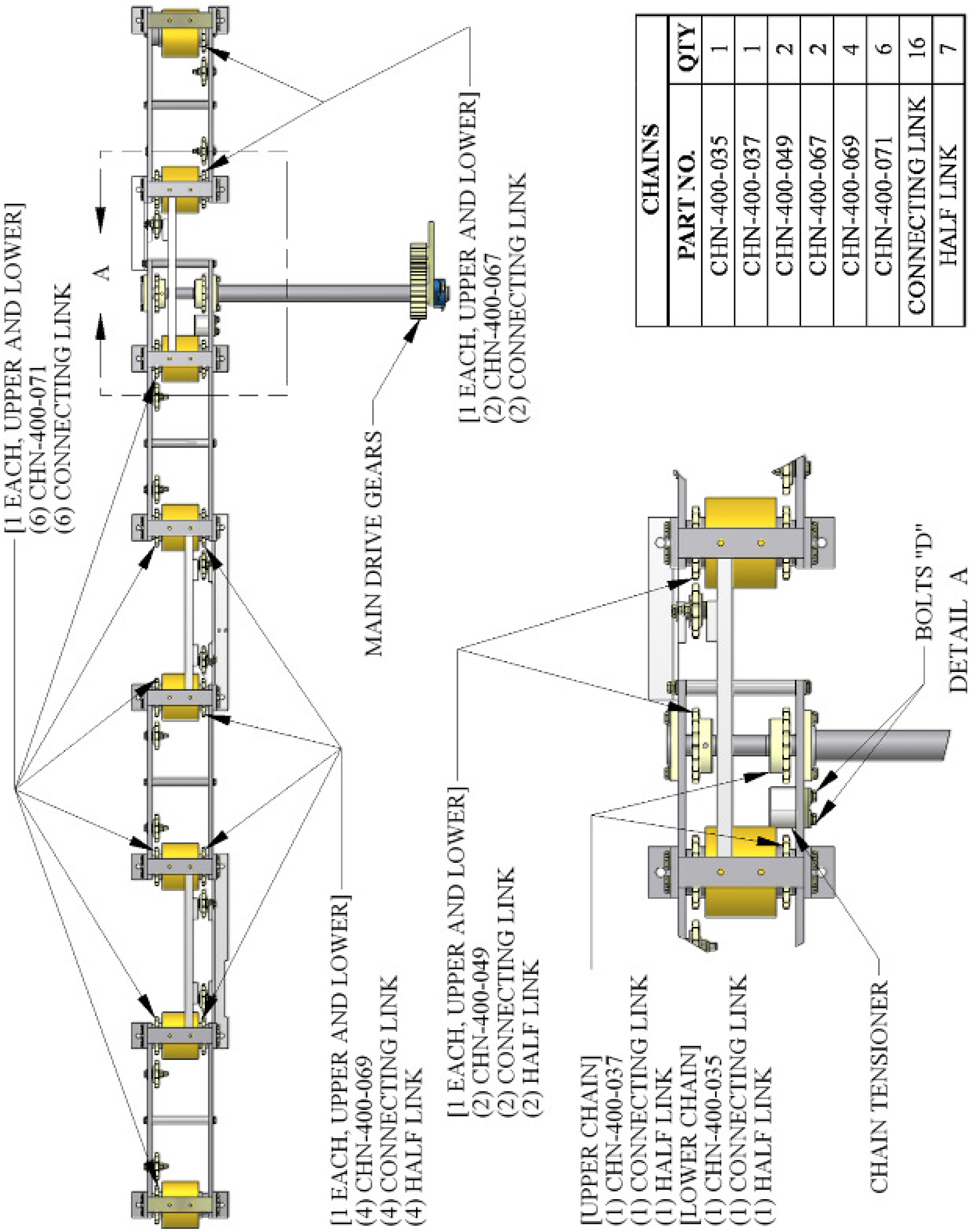



***Figure 17: Gears and Shafts***

# DRIVE SYSTEM




| CHAINS | |
|---|---|
| PART NO. | QTY |
| CHN-400-035 | 1 |
| CHN-400-037 | 1 |
| CHN-400-049 | 2 |
| CHN-400-067 | 2 |
| CHN-400-069 | 4 |
| CHN-400-071 | 6 |
| CONNECTING LINK | 16 |
| HALF LINK | 7 |

***Figure 18: Chains Upper and Lower***

# SHEAR ASSEMBLY

# SHEAR ASSEMBLY

## OPERATION

Push the **SHEAR DOWN** button to activate the shear cycle and cut material. **IN CASE OF AN EMERGENCY:** Push the **SHEAR UP button during the down cycle to immediately send the shear up to the home position.**
The shear is electrically activated and hydraulically driven.
The two Top Limit Switches and single Bottom Pressure Switch control the cycle of the shear.
The Top Limit Switches electronically lock out the drive system when the shear is in motion.
The Bottom Pressure Switch sends the shear back up once the set pressure is reached.

## SHEAR ADJUSTMENTS

Bottom Shear Dies (Detail A - Figure 20)

1. Bottom dies should be adjusted 1/32" below the bottom corners of the panel. Loosen the (2) "A" bolts on the left and right Front Vertical Plates. Loosen the (2) lock nuts on the (2) Height Adjustment bolts "B".
2. Tightening bolts "B" will lower the shear, and loosening them will raise it. Adjust each side as needed to properly set the bottom dies to the correct spacing from the bottom corners of the panel.
3. After adjustments have been made, tighten (2) "A" bolts and (2) Lock Nuts on Height Adjustment Bolts "B".

## CHANGING ENTRY AND EXIT SHEAR DIES

(Figure 19 & Figure 20)
The Entry and Exit Shear Dies are specific to each roller set and must be changed when changing profiles. Refer to the PROFILE CHANGEOVER PROCEDURE for instruction on changing dies.

## ADJUSTING THE ENTRY AND EXIT SHEAR DIES

(Figure 19 & Figure 20)

1. The Male and Female entry and Exit Shear Dies must be adjusted to the proper distance from the vertical legs of the panel. The outside vertical leg of the male and female Entry Dies should be approximately 1/32" away from the outside of the vertical legs of the panel. The Exit Dies should be slightly to the outside of the male and female Entry Dies so that after a cut is made, the panel does not hang up on the Exit Dies.
2. Each Shear Die Holder is held in position by (2) "C" bolts passing through slotted holes at the bottom edge of the holder, and threaded into the Entry and Exit Shear Plates.
3. Visually sight thru the male and female entry dies. Rough align them to the forming tool "line of fire" by moving them side-to-side. If necessary, remove bolts "C" and slide the Die Holders left or right until you find two mounting holes that will work for proper alignment, then re-install bolts "C". **Tighten them just enough to hold the dies in position.**
4. Jog the material through the machine and stop about 2 inches from the Entry Shear Dies. Now re-sight the alignment of the Male and Female Dies to the actual legs of the panel and move them accordingly to assure the panel will pass through without hanging up. Carefully jog material through the shear dies. Final adjust Entry and Exit Dies as follows: The **Male**

**and Female Entry Dies** should be 1/32” or less away from the back side of the vertical leg of the panel. The **Male and Female Exit Dies** should be adjusted slightly to the outside of the entry dies so that the cut edge of the panel clears the dies without interference when passing through after a cut. Once alignment of the dies is achieved, tighten all “C” bolts. Jog the material out approximately 2”. Engage the shear to cut to 2” piece off. Inspect the cut made on this piece and the piece still in the machine by jogging it out another 2” so it can be viewed. If the cut is not satisfactory, re-adjust as necessary.

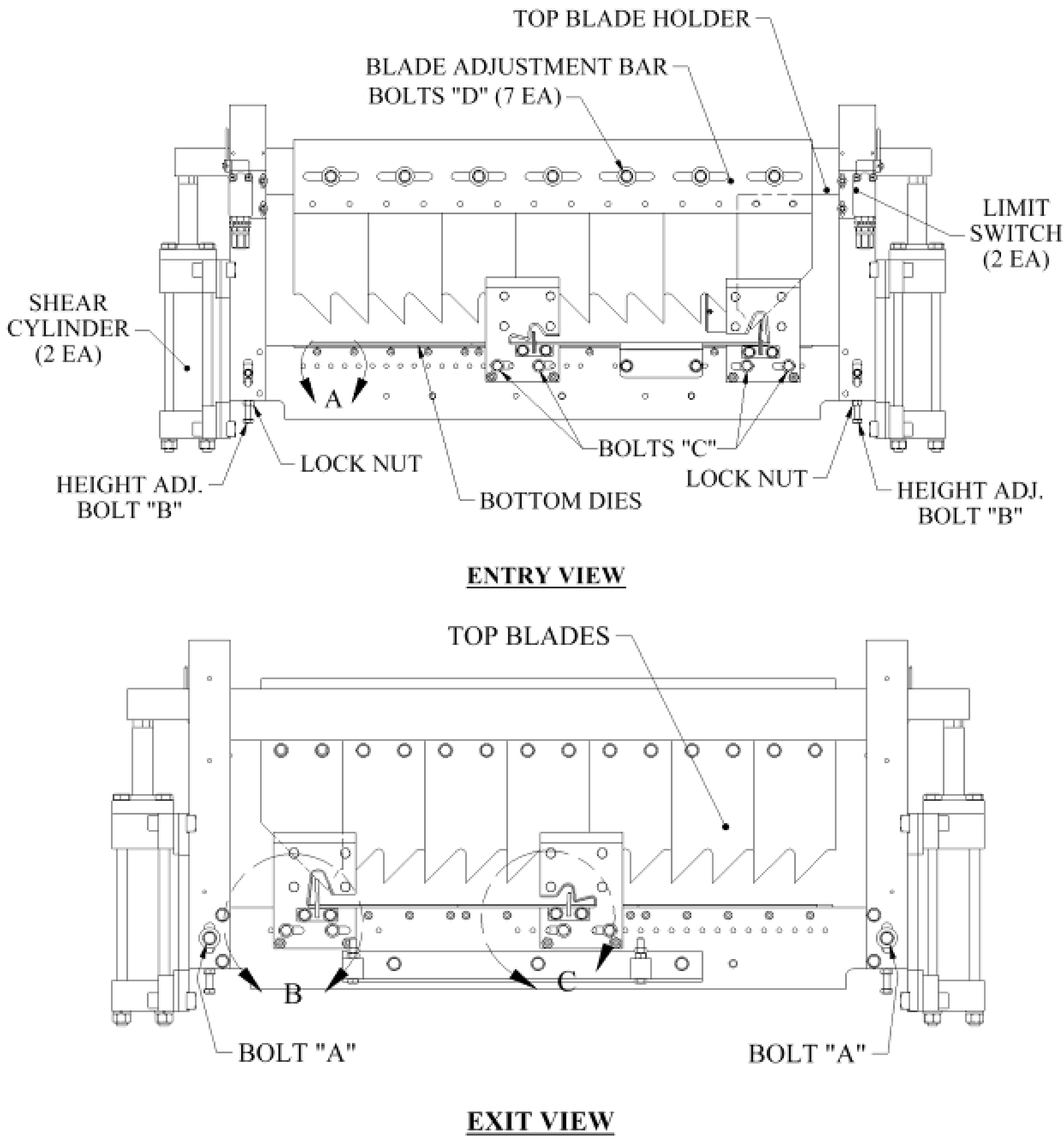
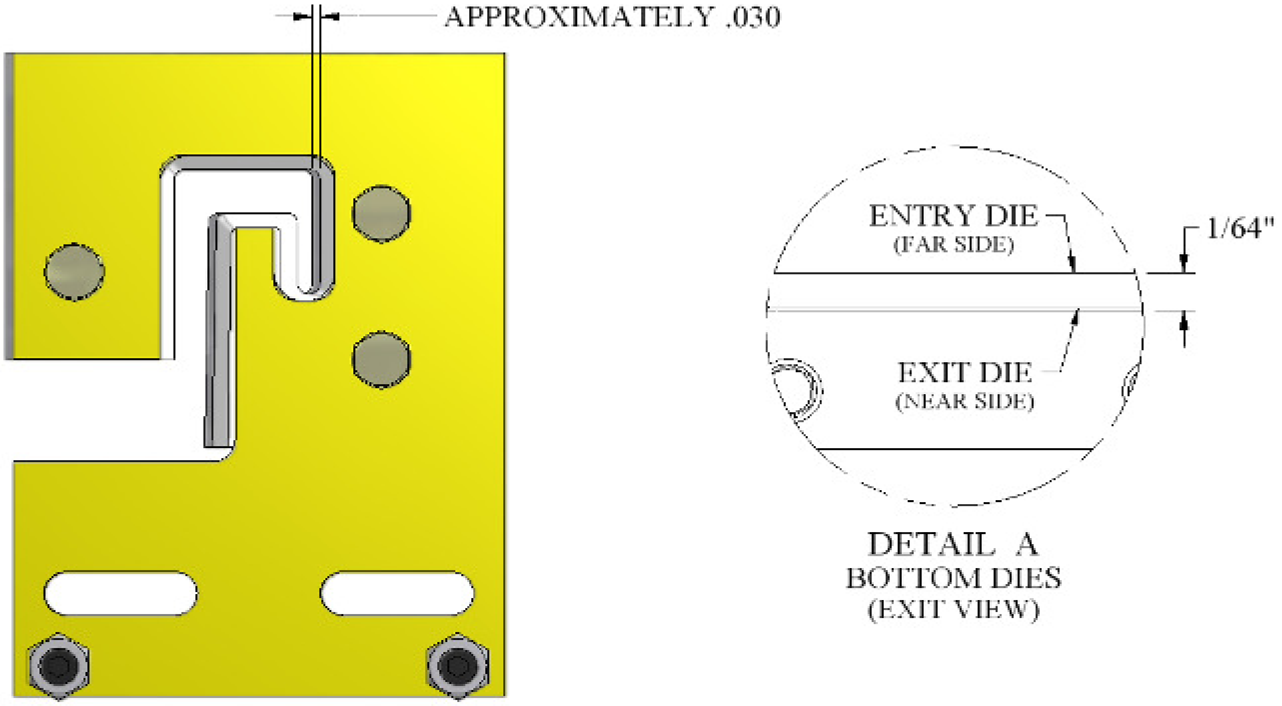



*Figure 19: Entry/Exit Views*

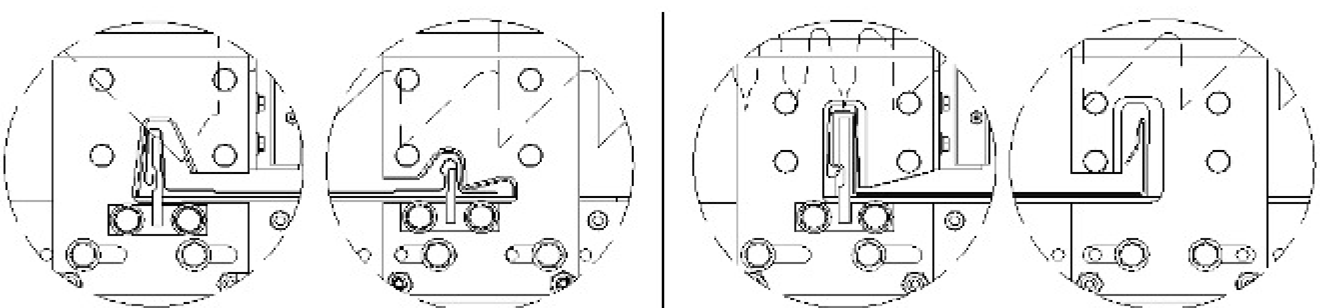
# SHEAR ASSEMBLY




EXIT VIEW

DETAIL A
BOTTOM DIES
(EXIT VIEW)

## BLADE ADJUSTMENT



DETAIL B
FEMALE DIES
(EXIT VIEW)

DETAIL C
MALE DIES
(EXIT VIEW)

DETAIL D
FEMALE DIES
(EXIT VIEW)

DETAIL E
MALE DIES
(EXIT VIEW)

**MECHANICAL BLADE**
USE WITH
SSQ100, SSQ150, SSQ200, SSQ210A, SSQ450, SSQ450SL, FFQ100, FFQ150, BP1, BP1-1/2, AND T-PANEL

**SNAP BLADE**
USE WITH
SSQ550 AND SSQ675

***Figure 20: Shear Die Detail Views***

CHAPTER 9

# SHEAR ASSEMBLY

## TOP SHEAR BLADE ADJUSTMENT

(Figure 19 & Figure 20 – Details B & C)
The Top Shear Blades are bolted to the Blade Adjustment Bar. This bar is bolted to the Top Blade Holder, and can be moved from left to right to align the blades to the Die Holders.

**1.** Loosen the 7 "D" bolts in the slots at the top entry side of the shear so that the Blade Adjustment Bar will move from side to side.
**2.** The point of the Top #1 Blade should always be inboard of the Female vertical leg of the panel, and should not pierce the top horizontal leg of the profile. The rake or angle of the blade should cut in a scissor action outward against the leg. The #2 Top Blade must be adjusted simultaneously in the same manner for the Male leg. You should be able to find a position that works for both Male and Female legs. Once the Blade Adjustment Bar is in the correct location, tighten all "D" bolts.
**3.** Jog the panel out approximately 12" and make the first cut. Check the piece to make sure the cut is acceptable. Carefully jog the material through the shear dies making sure the panel does not get caught on the Male or Female exit dies. If the panel gets caught on the exit dies, fine tune the adjustment of the dies to correct the problem following the procedures above.

## MAINTENANCE

**1.** Clean and lubricate the Top Blades, Bottom Dies, and Male/ Female dies at least once a day during normal use, or whenever cutting surfaces look dry. Proper lubrication is essential to clean cuts, rust prevention and longevity.

Super Lube - Multi-Purpose Synthetic Dri Film Aerosol Lubricant with Syncolon (PTFE)
Catalog No. 11016
11 oz. Aerosol Can
Available from:
**MSC Supply at 1-800-645-7270**

# BEAD AND STRIATION ROLLER ASSEMBLY

## BEAD AND STRIATION ROLLER ASSEMBLY

1. The Bead / Striation Roller assembly (Figure 21) is located behind the shear and is accessed by removing top cover #3. These rollers can be engaged or disengaged as needed and can also be moved left or right to accommodate different panel widths.
2. The bottom bead or striation forming roller should be set 1 /32" above the drive roller to ensure proper entry into the shear. If adjustment is necessary, loosen the four frame mount bolts "B", and lock nuts on the two vertical adjustment bolts "A". Raise or lower the roller assembly by using the vertical adjustment bolts "A" to obtain the proper height. Then re-tighten the mount bolts and lock nuts on the two adjustment screws "A".
3. Next loosen the eccentric shaft lock down screw "C". Place a 5/32" Allen Wrench in the small hole at the end of the eccentric shaft, and rotate the top roller up until it clears the bottom roller. Loosen the two top and two bottom slide lock down screws "D". Bring the panel material up to the rollers but not past them. **SHUT OFF THE MACHINE AND DISCONNECT THE POWER BEFORE CONTINUING.** Locate the bottom rollers to the desired position by sliding the assembly on the bottom slide bars. Tighten the bottom slide lock-down screws "D". Restart the machine and back up the panel until you gain access to the top slide lock-down screws, **AGAIN SHUT OFF THE MACHINE AND DISCONNECT THE POWER.** Loosen the top slide lock-down screws, and slide them into position so the top roller is directly over the bottom roller. Tighten the top slide lock-down screws "D". Next rotate the eccentric shaft down to the desired bead depth. **DO NOT** go below .045" minimum clearance; excessive bead depth will distort your panel. Re-tighten screws "C".
4. Keep slide bars lightly greased to allow bead or striation assemblies to slide smoothly.

CHAPTER 10

# BEAD AND STRIATION ROLLER ASSEMBLY

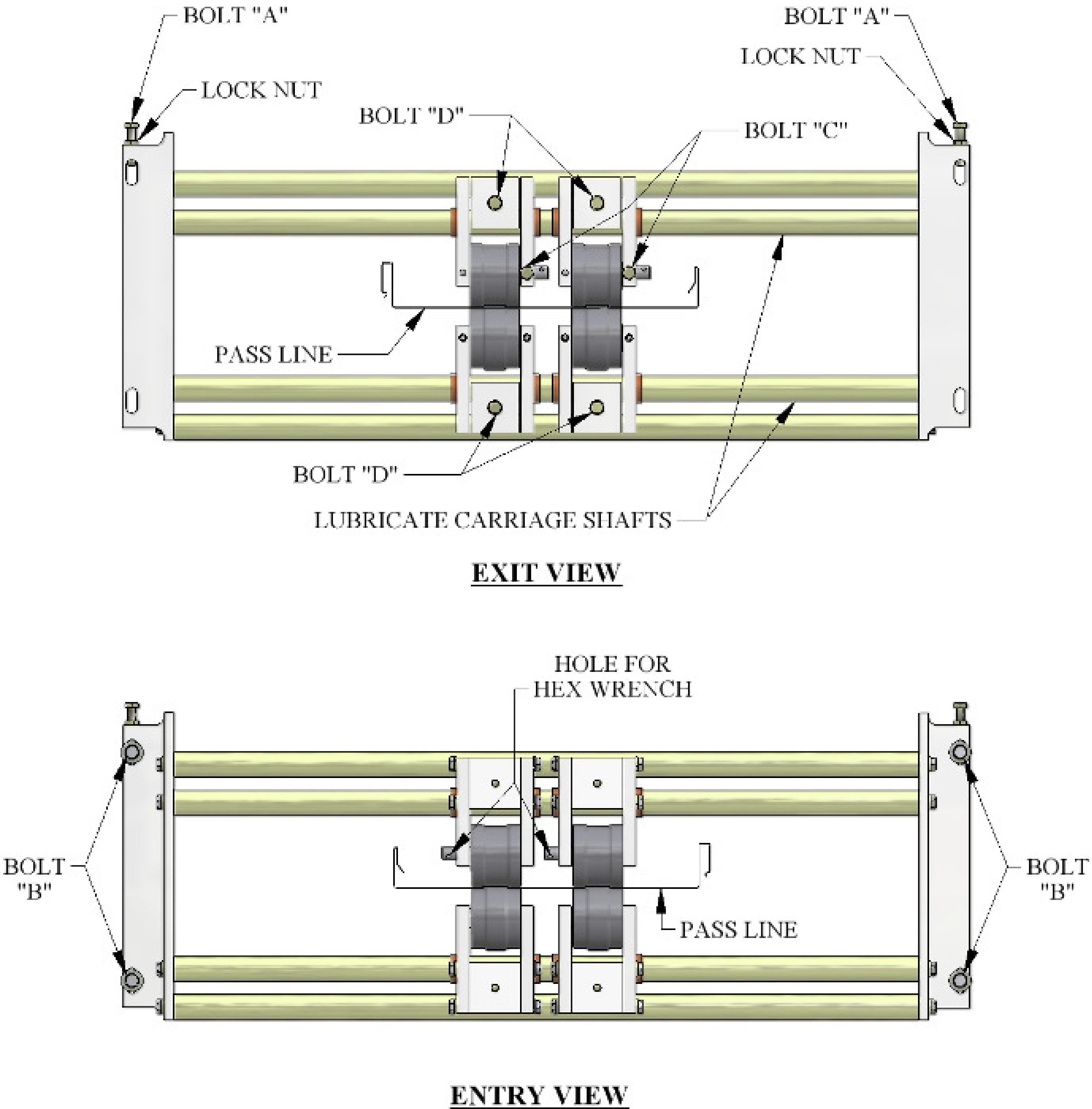



***Figure 21: Bead Roller Assembly***

# ENTRY GUIDE ASSEMBLY

## ENTRY GUIDE ADJUSTMENT

(Figure 22 & Figure 23)

The entry guides are used to set the material to the correct position in relation to the forming rollers of the machine. They also hold the material and feed it straight into the machine. If the entry guides are not set correctly the material will not feed into the machine properly.

1. The Right Entry Guide is set to the Tooling Rail Marker Plate mounted to the R1 Tooling Rail.
2. To align, loosen the two "A" Bolts on the Right Entry Guide. Slide the entry guide to the left or right until the alignment pin which is located at the end of the top shoe of the entry guide, is directly under one of the notches on the Tooling Rail Marker Plate. Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the top of the marker plate.
3. Tighten the two "A" bolts.

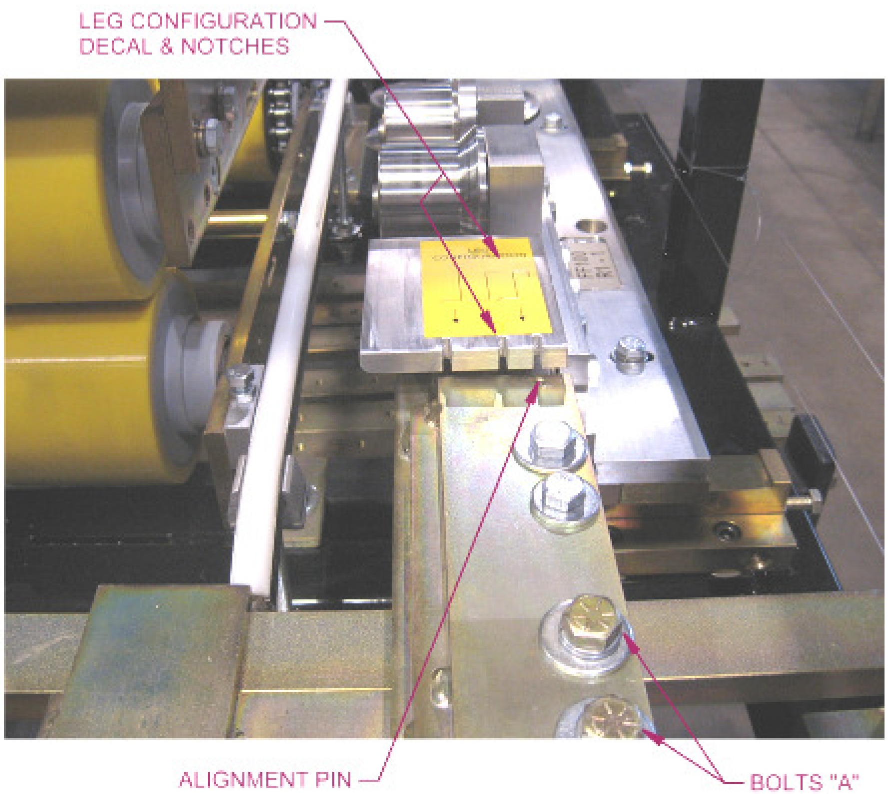



***Figure 22: Right Entry Guide***

4. Loosen bolt "A" on the left entry guide.
5. Cut a 12" long piece of gage material from the coil you will be using, to set the left entry guide.
6. Slide gage material between the left and right entry guides.

7. Slide the Left Entry Guide to the left or right to accept the new coil width. Make sure that the coil is captured snugly between the entry guides and re-tighten the two "A" bolts.

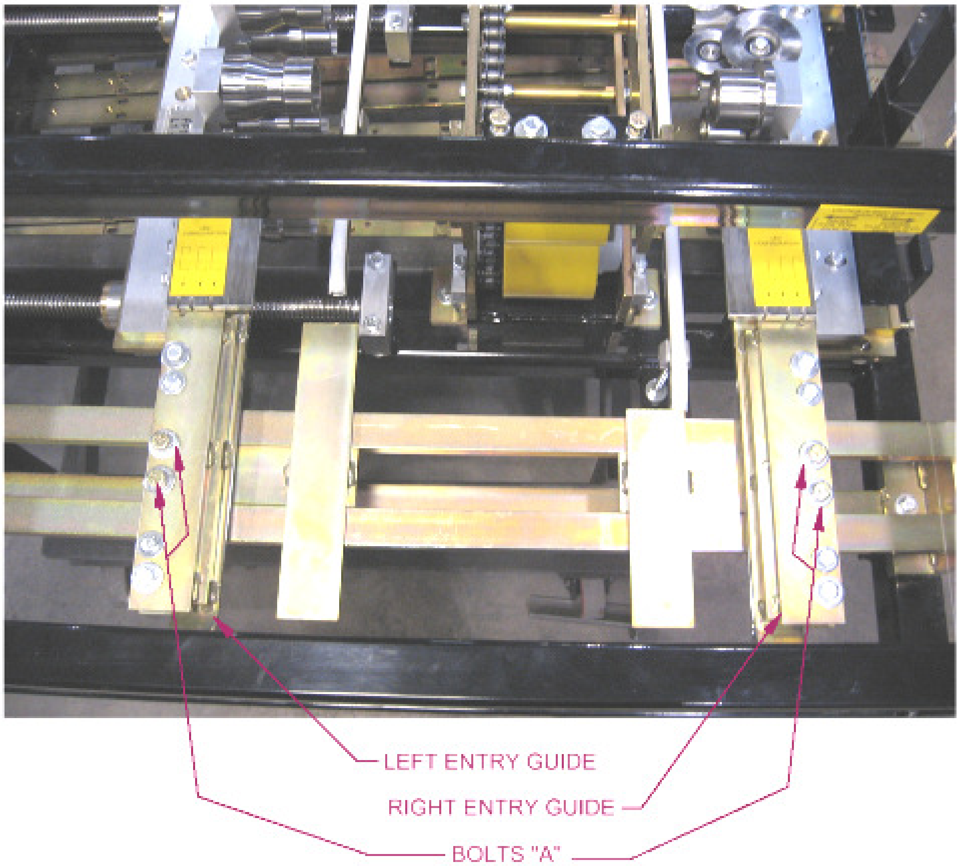



***Figure 23: Entry Guide Assembly***

## LEFT TOOLING RAIL TO ENTRY GUIDE ALIGNMENT

(Figure 24 to Figure 27)

The Tooling Rail Adjustment Handle is used to move the Left Tooling Rails assemblies to the left or right to align them to the Left Tooling Rail Marker Plate whenever a width change or tooling change has been made.

1. Using the Tooling Rail Adjustment Handle (Figure 24) align the notch on the tooling rail marker plate to the alignment pin located in the Left Entry Guide. Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the marker plate (Figure 25). The Tooling Rail Adjustment Handle is spring loaded to allow it to disengage from the width adjustment gear (Figure 26). Press the handle inward (Figure 27) to engage the width adjustment gear and turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward.

# ENTRY GUIDE ASSEMBLY



***Figure 24: Tooling Rail Adjustment Handle***

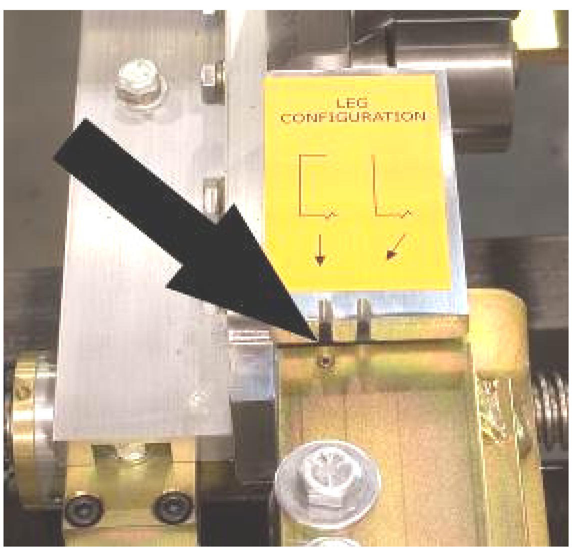



***Figure 25: Marker Plate & Alignment Pin***



***Figure 26: Disengaged***

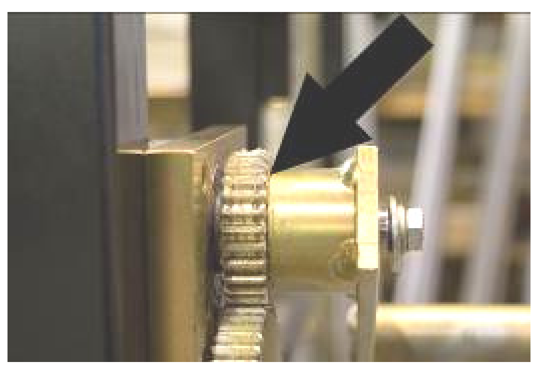


***Figure 27: Engaged***

# CLIP RELIEF ROLLER ASSEMBLY

## CLIP RELIEF ROLLER ASSEMBLY

1. Clip Relief Rollers (Figure 28) provide a raised area next to the male and female legs of the panel. This helps hide the clip and screws used in installation. They rollers can be engaged or disengaged as needed.
2. Find the Tooling Rail Sheet corresponding to the profile installed in your machine (Figure 59 - Figure 79).
   Note the location of clip relief assembly's on left and right tooling rails, and locate them on the tooling set in your machine.
3. To engage the clip relief rollers loosen lock down screw "A" and insert a 5/32" allen wrench into the small hole on the top eccentric shaft "B".
4. Rotate the eccentric shaft to engage or disengage the top roller assembly from the bottom roller assembly. Adjust both left and right bead assemblies to the desired depth using a feeler gage. Recommend factory setting is 0.080 inches gap between top and bottom rollers.

**NOTE: The FF100 and FF150 profiles must always be engaged for proper male/female lock to occur.**

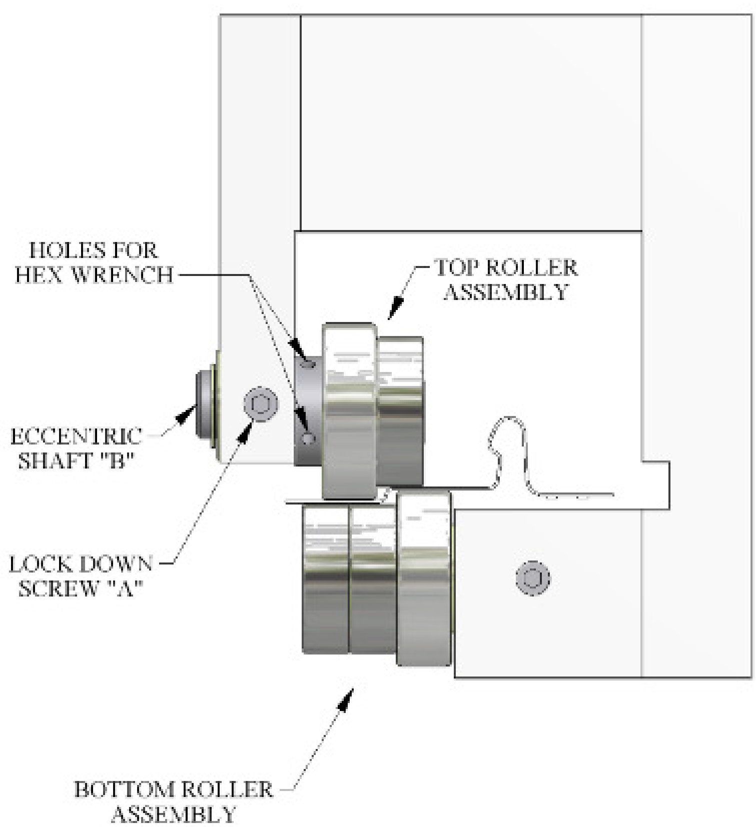



***Figure 28: Clip Relief Roller Assembly***

# ENTRY DRUM ASSEMBLY

## ENTRY DRUM ASSEMBLY

The Entry Drum Assembly is necessary when feeding coil off of the optional DR1/ Dual Overhead Reel Stand. It allows you to route the material around the drums to get the painted side of the coil on the top as it enters the machine. Without this assembly, you could only feed coil from a remote arbor and stand lined up behind the machine. The Entry Drums need to be adjusted whenever a width change is made.
To adjust the entry drums:

1. Using a 3/16" allen wrench, loosen the four Shaft Collars "E", on either side of Left Entry Drum and Center Entry Drum. (Figure 29)
2. Slide the Left Entry Drum over until it is lined up with left edge of the new coil and align the Center Entry Drum equally spaced from the Left and Right Entry Drums.
3. Slide the four Shaft Collars "E" against the sides of the drums and lock them into place.
4. If you are making a Roller System Change, you may have to move all three drums using the same procedure described above.

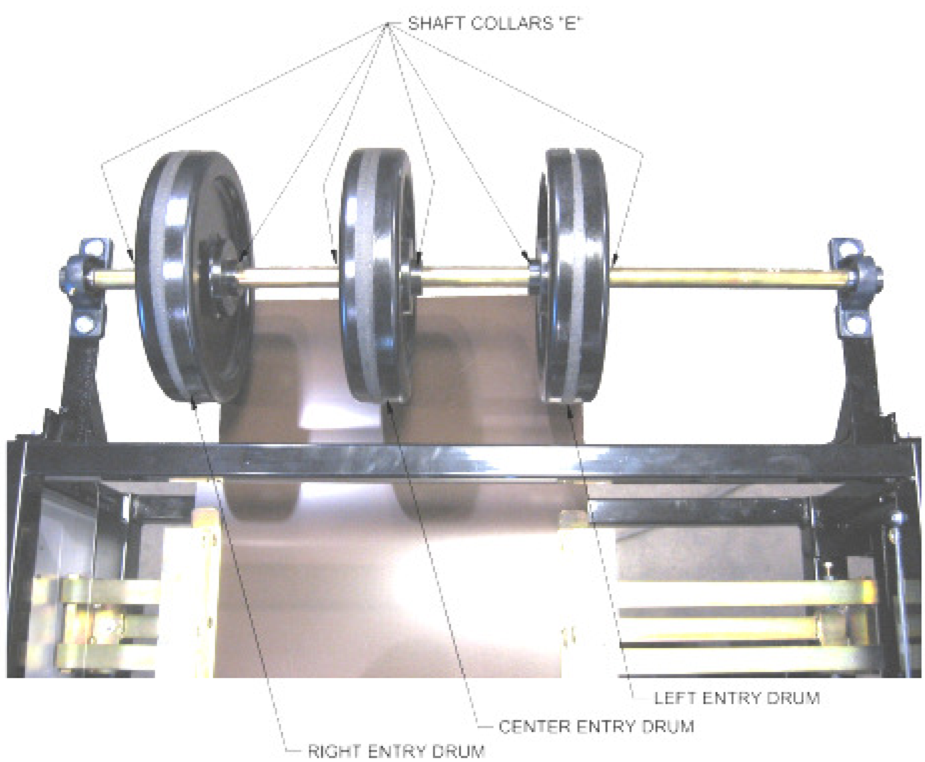



***Figure 29: Entry Drum***

# WIDTH CHANGE PROCEDURE

## WIDTH CHANGE PROCEDURE

**CAUTION:** ***Always make sure your machine is shut down prior to making any adjustments.* DO NOT *reach through the opening of the shear while the machine is running.* EVER! To do so could result in serious injury.**

1. Loosen the two "A" bolts on the Left Entry Guide (Figure 30). Slide the entry guide to the left or right to accept the new coil width.

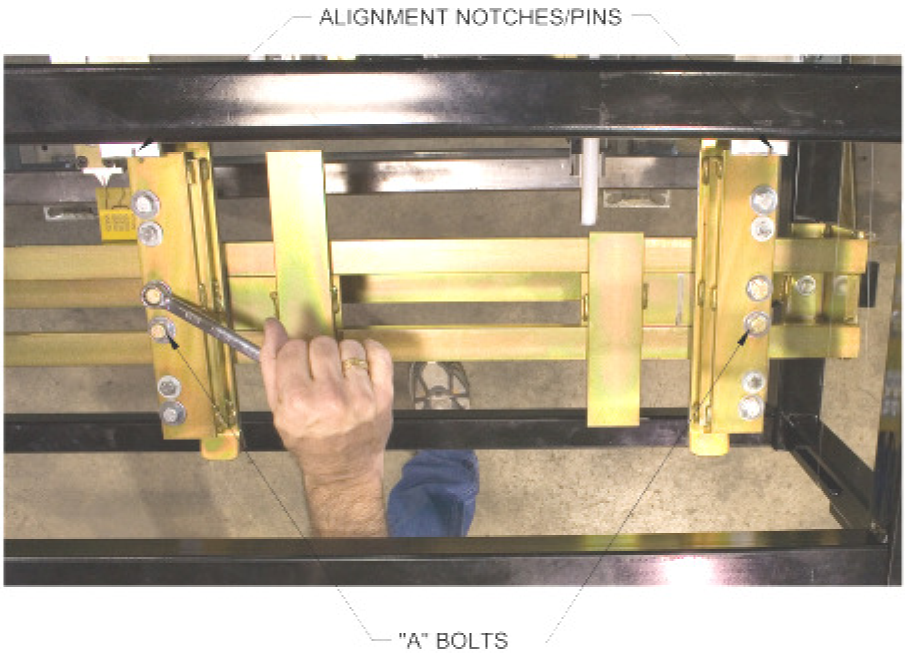


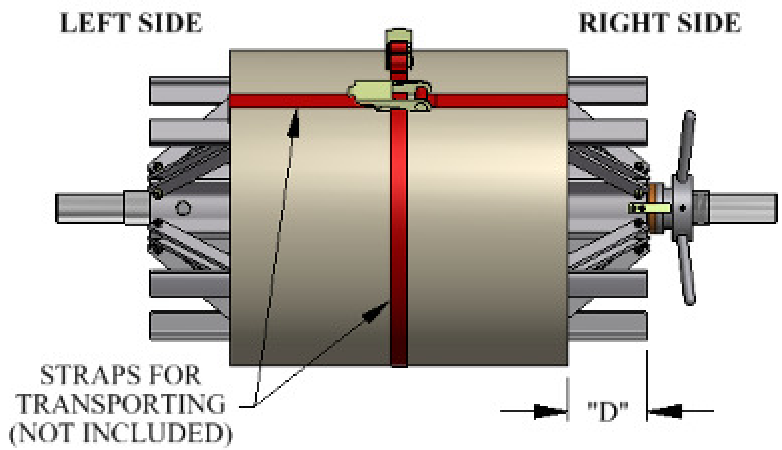

***Figure 30: Entry Guide Bolts "A"***

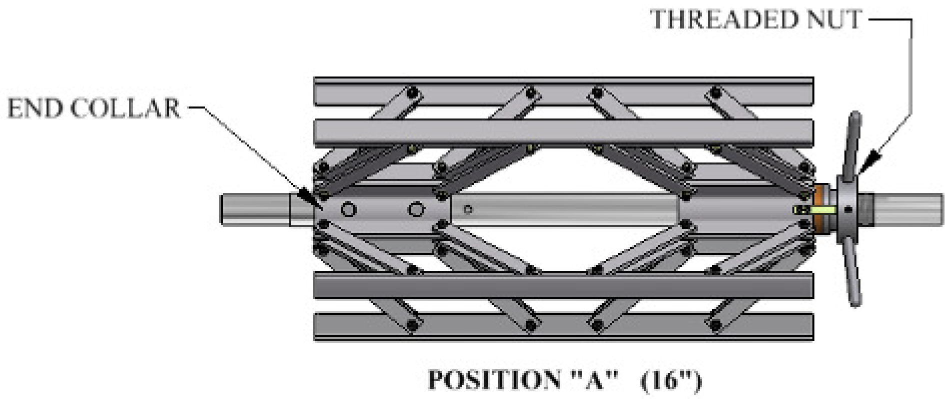
2. Make sure that the coil is captured snugly between the entry guides and re-tighten the two "A" bolts.
3. Using the Tooling Rail Adjustment Handle "B" (Figure 24) align the notch on the tooling rail marker plate to the alignment pin located in the Left Entry Guide. Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the marker plate (Figure 25). The Tooling Rail Adjustment Handle is spring loaded to allow it to disengage from the width adjustment gear (Figure 26). Press inward on the center of the handle and turn (Figure 27) to engage the width adjustment gear. Turn the handle clockwise to move the tooling outward or counter-clockwise to move it inward.

# WIDTH CHANGE PROCEDURE

**4.** Load material onto the Expandable Arbor and align it to the correct position using the chart on (Figure 31).
Note: Also see REEL STANDS, REELS AND EXPANDABLE ARBORS for more information.

| SET-UP CHART | |
|---|---|
| **PROFILE** | **"D"** |
| BP | 3-1/4" |
| FF100 | 1-5/8" |
| FF150 | 5/8" |
| SS100 | 2-3/8" |
| SS150 | 1-7/8" |
| SS200/210A | 7/8" |
| SS450/450SL | 7/8" |
| SS550 | 1" |
| SS675 | 1/4" |



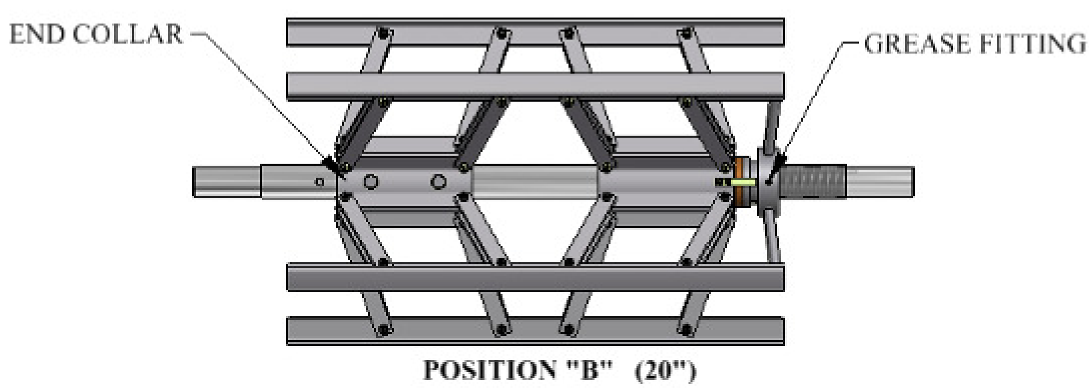




***Figure 31: Expandable Arbor Setup***

# WIDTH CHANGE PROCEDURE

5. Load the reeled coil onto the machine using a fork lift or other rated lifting device. Making sure the tail of the coil goes over the top and points toward the shear end of the machine. See coil routing diagram (Figure 12).
6. Cut a 1” triangle of off the 2 leading corners of the coil and feed it into the entry guides. (Figure 32)



***Figure 32: Loading Material***

7. Start the machine and use the Jog button on the Manual Control Box or Computer, to jog the material through the machine 6 to 8 inches at a time until it exits the last forming stations, and is about 1” from the Bead Roller Assembly. (Figure 21).

***SHUT YOUR MACHINE DOWN BEFORE PROCEEDING.***

# WIDTH CHANGE PROCEDURE

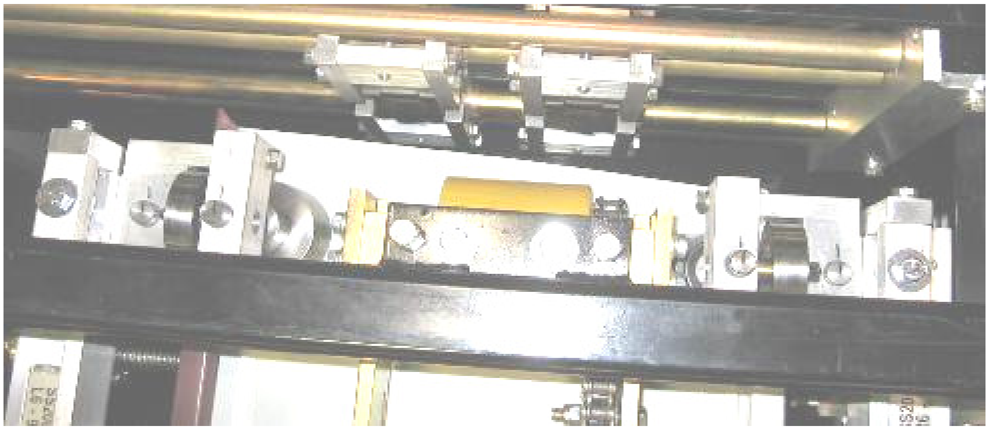


*Figure 33: Bead Roller Alignment*

**8.** If you require beads in the panel, determine the spacing needed. For Example: a 12” wide panel with 2 beads centered on the panel would give you 3 equal spaces or 12” divided by 3 equals 4” from center to center of each bead. Hook the end of you tape measure on the outside bottom corner of the female leg. Use a magic marker or grease pencil to mark the 4” and 8” locations on the panel. You now have 3 equal spaces.

**9.** Loosen the slide lock bolts on the top and bottom bead assemblies (Figure 34) and slide each bottom and top roll assembly left or right to center them on the 4” and 8” marks on the panel.

**10.** Lock the two top bead assemblies in the correct position by tightening the slide lock bolt “D” on each assembly. Next align the bottom bead rollers to the tops so that the ends of the top and bottom rollers are flush with each other and tighten the bottom slide lock bolts on these 2 assemblies.

CHAPTER 14

# WIDTH CHANGE PROCEDURE

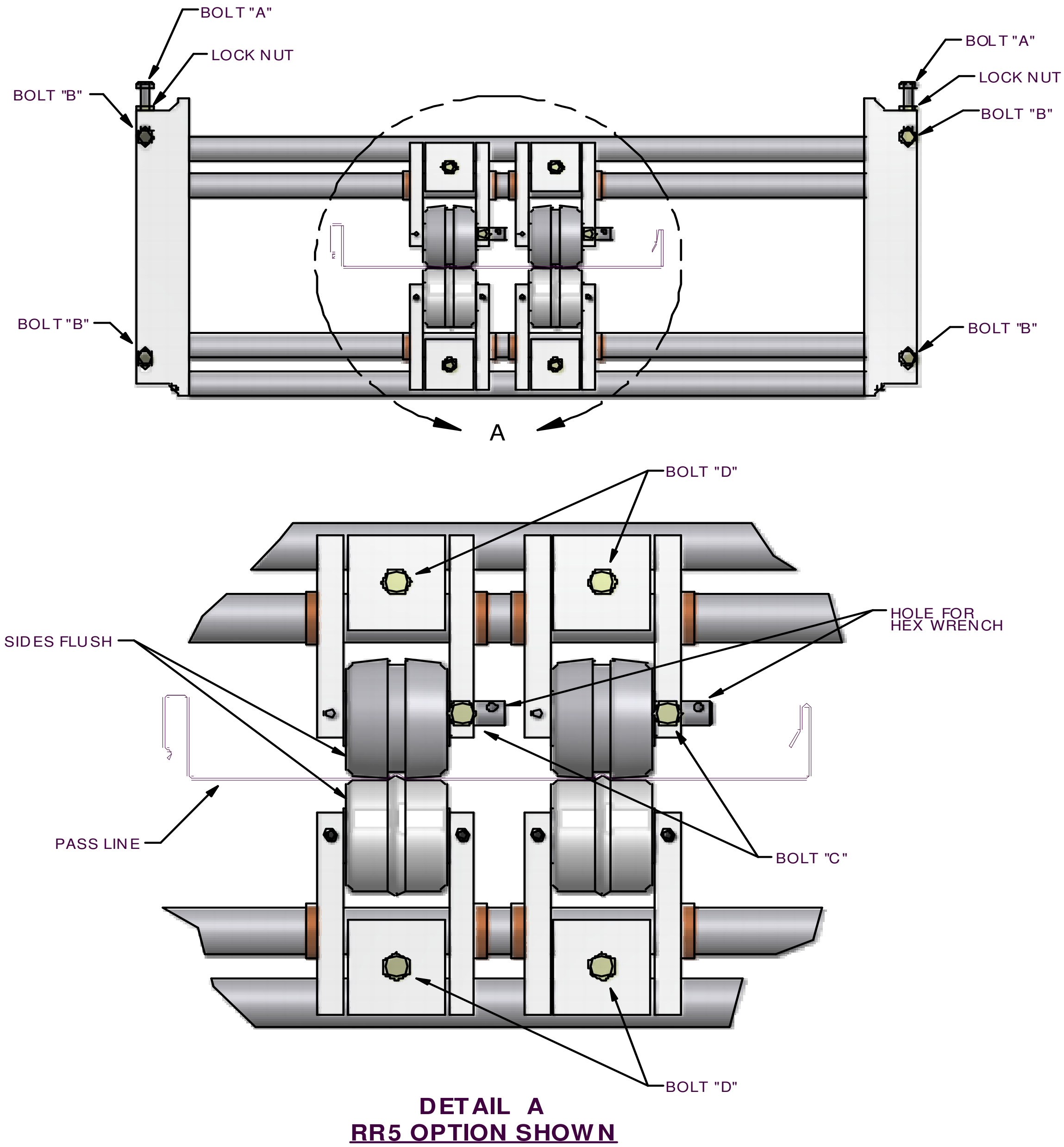



***Figure 34: Bead Roller Width Change***

**11.** Check the gap between the top and bottom bead rollers using a feeler gauge. An approximate setting of 1½ times the material thickness is recommended. This setting can be adjusted slightly in either direction according to preference.

**12.** To set or change the gap between top and bottom beads, loosen the "C" bolt on both top rollers (Figure 34).

**13.** Insert the correct feeler gage between one of the top and bottom rollers. Locate the feeler gage on the flat of the roller next to the side plate of the assembly.

# WIDTH CHANGE PROCEDURE

**14.** Rotate the top shaft from the 12:00 position toward the shear to decrease the gap, or away from the shear to increase the gap until the feeler gage is captured.
**15.** Tighten the "C" bolt to lock the position of the shaft.
**16.** Repeat steps 11through 15for the remainder of the bead rollers.
**17.** Start the machine, jog the material through the bead assemblies and stop 2 to 3 inches from the entry shear dies.
**18.** Inspect the beads for depth and re-adjust as necessary.

**CAUTION: SHUT THE MACHINE OFF BEFORE PROCEEDING.**

**19.** Start the machine and jog the material through the bead assemblies and stop 2 to 3 inches from the entry shear dies
***SHUT THE MACHINE OFF AGAIN BEFORE PROCEEDING.***

**20.** Remove the two "C" bolts located in the slotted holes at the bottom edge of the exit male shear die assembly and set the bolts and assembly aside. (Figure 35)

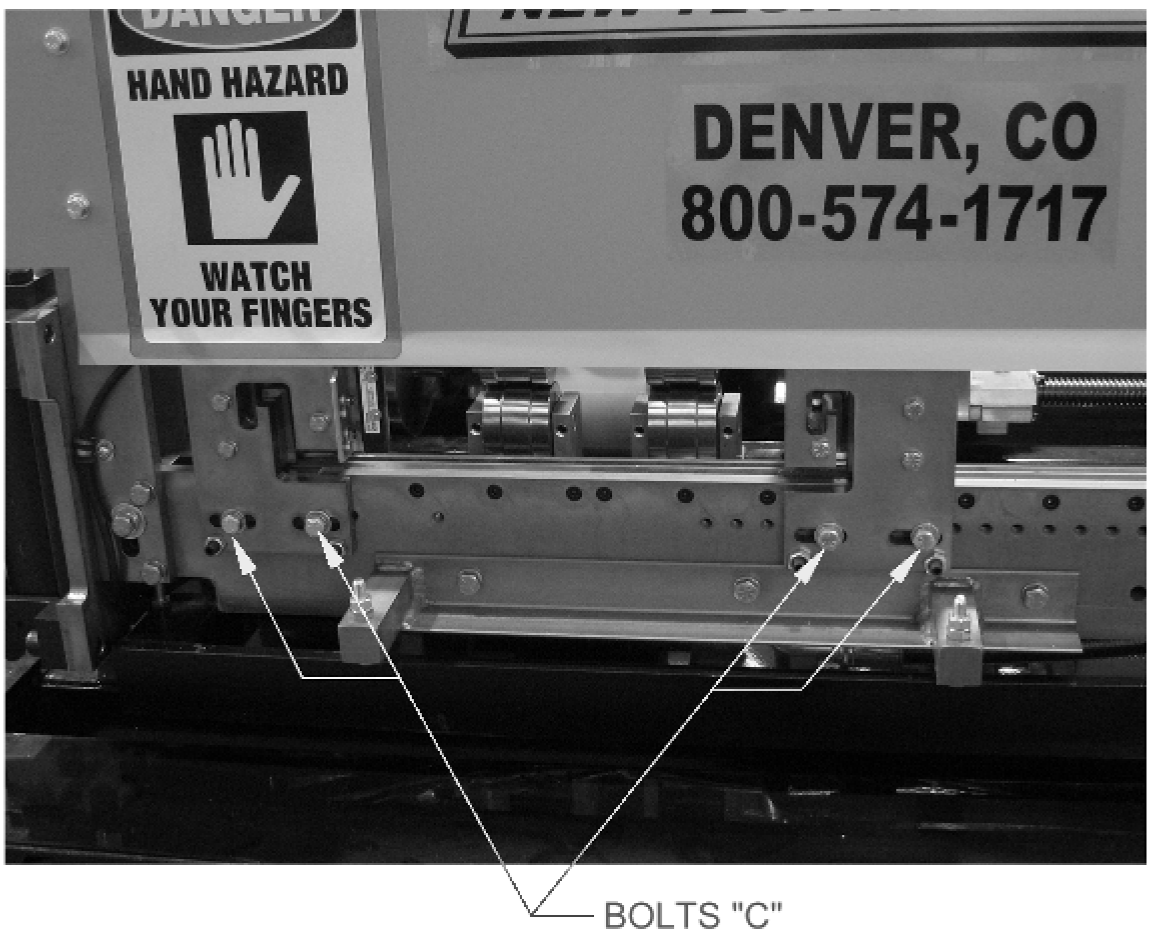



***Figure 35: Shear Bolts***

**21.** Remove the two "C" bolts in the slotted holes on the entry male shear die assembly.

**22.** Visually site through the male entry die and rough align it to the forming tool "line of fire" by sliding it left or right. Re-install the two "C" bolts into holes that correspond to the slots. Do not tighten the bolts at this time, just snug them up.

**23.** Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.

**24.** Start the machine and carefully jog the panel up to the shear. Check to see if the panel will pass through the entry shear die. If not **FIRST SHUT THE MACHINE OFF,** then move the entry die so that the panel will pass through it.

Adjust the entry die so that it is as close to the outside vertical portion of the leg as possible without touching it. Once this is done, tighten the two "C" bolts on the entry male shear die assembly.

**25.** Check the exit shear die to ensure that the material will pass through it. If not adjust as necessary.

**26.** Start the machine again and slowly jog the panel approximately 6" past the exit male shear die assembly and stop. Again, **TURN THE MACHINE OFF.**

**27.** Adjust the exit male shear die assembly so that it is offset to the outside of the entry die by approximately 1/64" and lock down the two "C" bolts (Figure 36) ***This offset is necessary so that after a cut is made, the leading edge of the panel does not hang up on the exit die.***

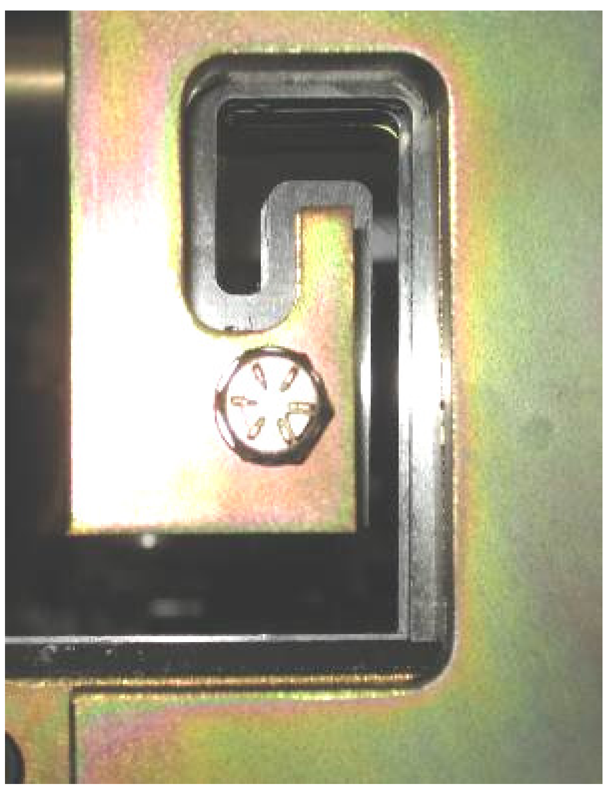


***Figure 36: Exit Die Adjustment***

**28.** Look down the leg of the panel and make sure that the entry and exit male shear die assemblies are not touching the panel as it passes through them.

# WIDTH CHANGE PROCEDURE

**29.** Make sure that one of the points of the top shear blade is inboard of the vertical portion of the male leg. This part of the leg should be cut with the angle or rake of the blade to cut in a scissor action against the vertical die. See **TOP SHEAR BLADE ADJUSTMENT** (Figure 19 & Figure 20) if adjustment is necessary.

**30.** Start the machine and press the shear down button to cut off the panel, then jog the material through the shear again and stop.

**31.** Inspect the two cuts and adjust the dies as necessary until an acceptable cut is made. Again, **TURN THE MACHINE OFF BEFORE MAKING ANY ADJUSTMENTS.**

**32.** Once you are satisfied with the cut being made, you are ready to run panel.

# PROFILE CHANGEOVER PROCEDURE

## PROFILE CHANGEOVER PROCEDURE

**CAUTION:** ***Always make sure your machine is shut down prior to making any adjustments.*** **DO NOT** ***reach through the opening of the shear while the machine is running.*** **EVER! To do so could result in serious injury.**

**1.** Remove Top Covers number 1, 2, 3, 4, and 5 (Figure 37) and set aside.

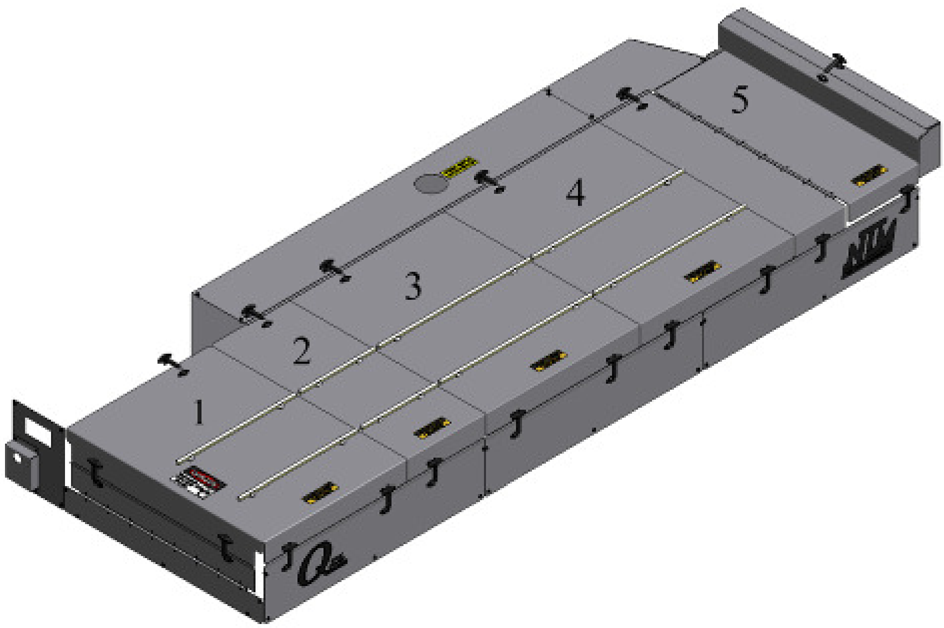



***Figure 37: Remove Top Covers***

**2.** Using a ½" wrench, remove the bolts holding the right and left Tooling Rails to the Fixed Rail Mounts (Figure 38). Store the tooling and set the hardware near the machine for use when installing the next profile. Note: the **SS100**, **SS150**, **SS450/450SL**, and **BP** profiles all share the same left-side rollers, so if you are changing from one of these profiles to another you will only need to remove the right-side Tooling Rails. Likewise, the **FF100** and **FF150** profiles also share the same left-side rollers, so if you are changing between these two profiles you will only need to remove the right-side Tooling Rails.

# PROFILE CHANGEOVER PROCEDURE



***Figure 38: Removing Tooling Rails***

**3.** Refer to the SSQ Slide Block chart (Figure 39) and find the profile you will be installing into the machine. It will tell you if the Right Side Fixed Mount Rail #1 needs to be in the Inboard position or Outboard position (Figure 40).

**IF THE RAIL <u>IS NOT IN THE CORRECT POSITION</u>, GO TO STEP 4.**
**IF THE RAIL <u>IS IN THE CORRECT POSITION</u> GO TO STEP 6.**

| SSQ SLIDE BLOCK CHART | |
|---|---|
| **PROFILE** | **RIGHT SIDE FIXED MOUNT RAIL #1** |
| BP, FF100, SS100, SS150 | INBOARD |
| FF150, SS200, SS450, SS550, SS675 | OUTBOARD |

***Figure 39: Block Chart***

# PROFILE CHANGEOVER PROCEDURE

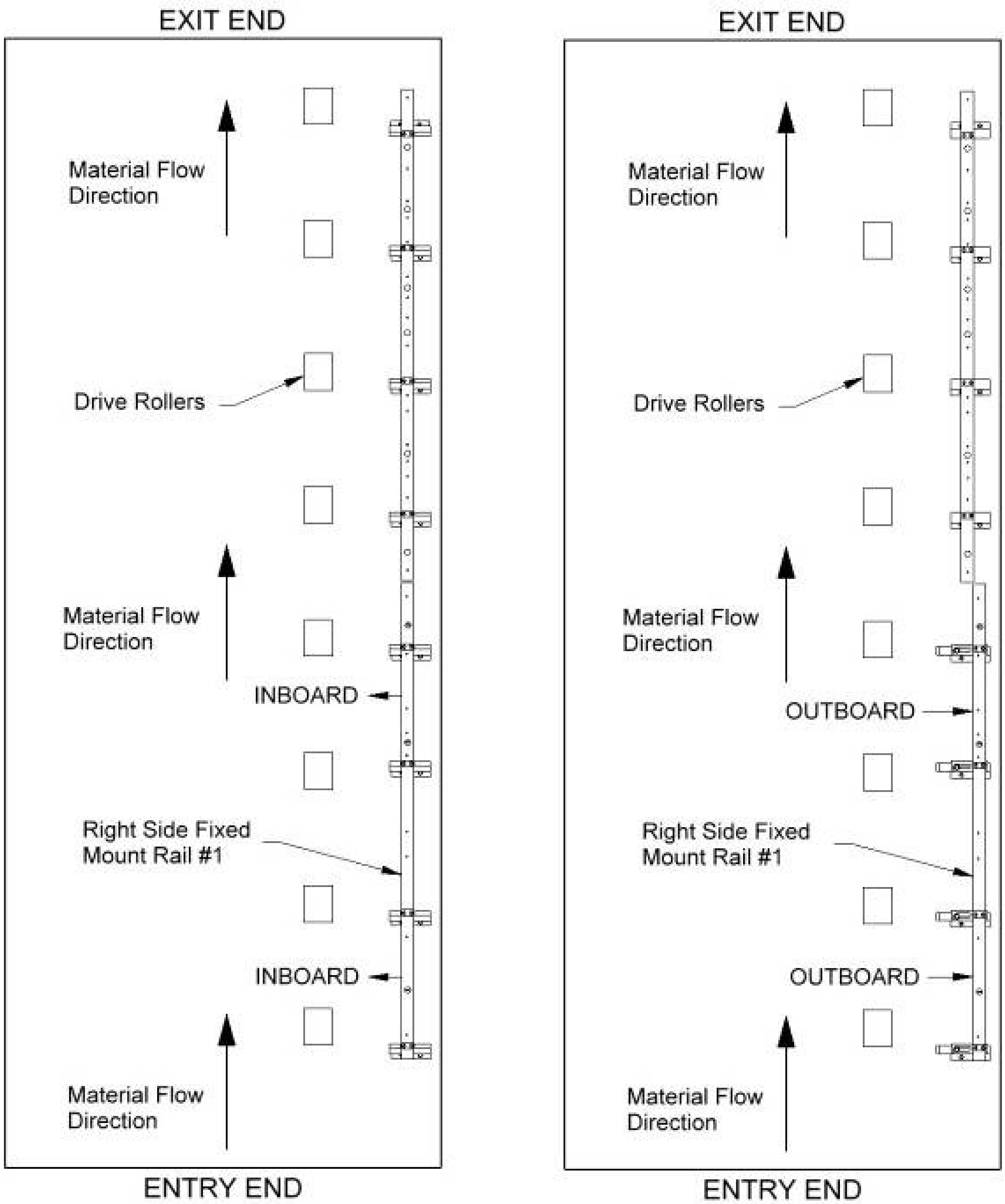



***Figure 40: Inboard/Outboard Positions***

**4.** Loosen bolt “C” on the first 4 Slide Block assemblies (Figure 41 or Figure 42).

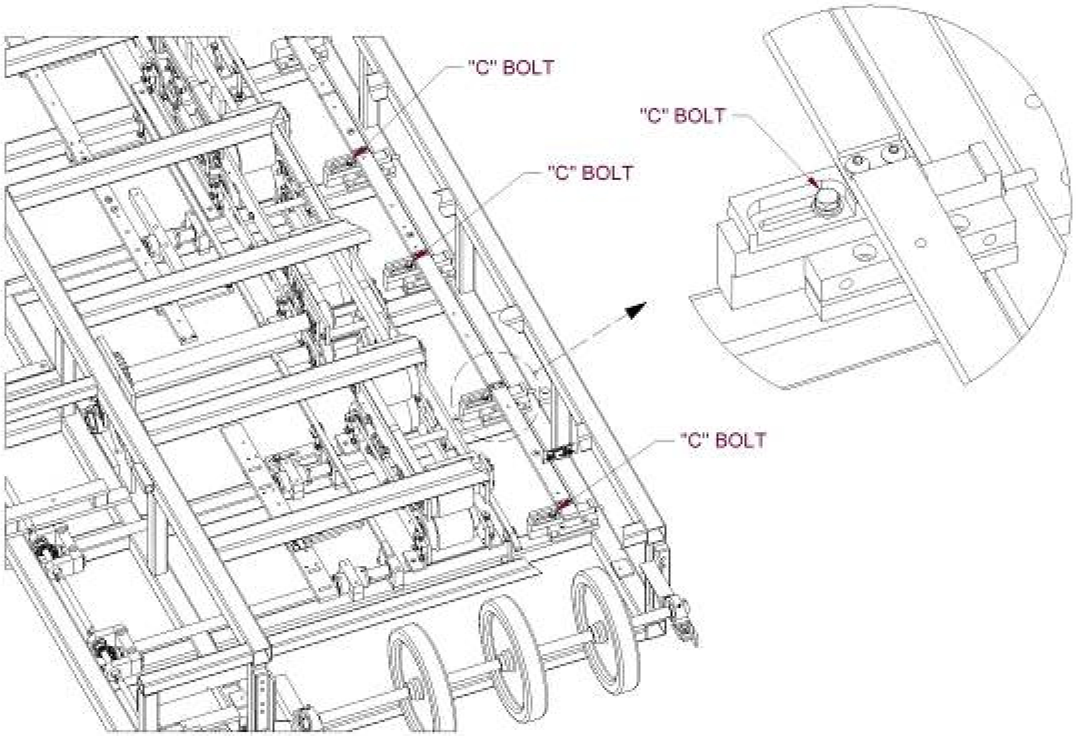



***Figure 41: April 2009 and later***

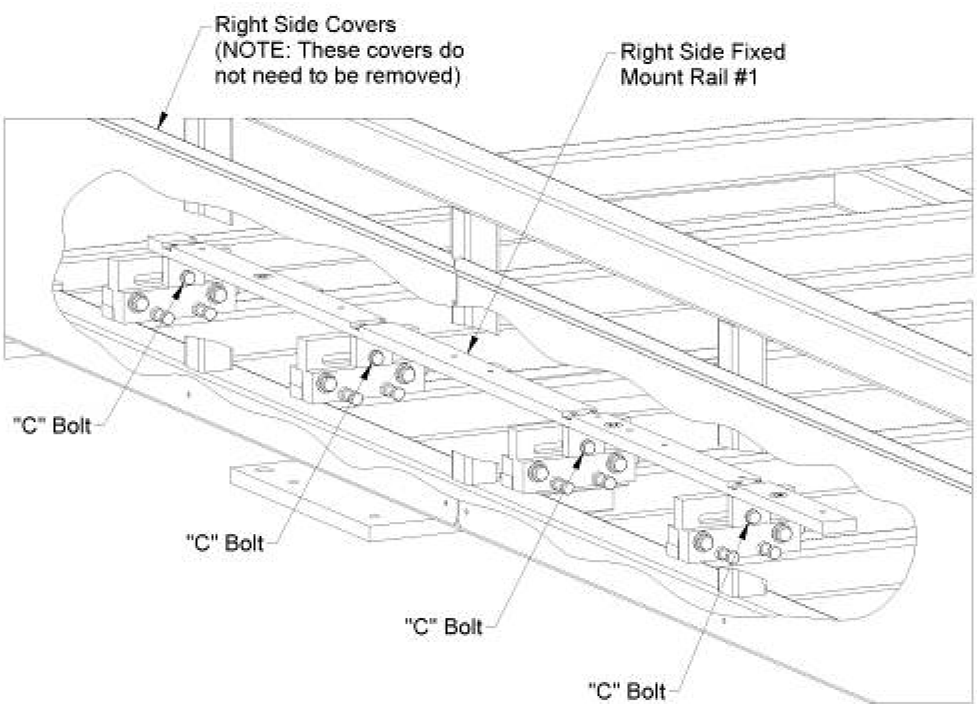



***Figure 42: Machines made before April 2009***

5. Once all 4 bolts are loose, slide the Right Side Fixed Mount Rail #1 to the correct position (Figure 43), either "inboard" or "outboard". Make sure that it is fully in position and then tighten the "C" bolts (Figure 41 or Figure 42).



***Figure 43: Right Side Fixed Mount Rail***

6. Locate your profile in the chart below to see what position the Left Side Fixed Mount Rail #1 needs to be in.

| PROFILE | LEFT SIDE FIXED MOUNT RAIL #1 POSITION |
|---|---|
| SS200/210A, SS550, SS675 | POSITION "A", OUTBOARD |
| SS100, SS150, SS450, FF100, FF150, BP | POSITION "B", INBOARD |

***Figure 44: Profile Chart***

Now look at the machine to see what position the Left Side Fixed Mount Rail #1 is currently in. The stamped letter closest to the mounting bolts "C" indicates the position (Figure 46). If it is in the correct position proceed to Step 7, otherwise, loosen the four mounting bolts "C", slide the Left Side Fixed Mount Rail #1 as far as it will go in either the "inboard" or "outboard" direction, and re-tighten the bolts.

# PROFILE CHANGEOVER PROCEDURE

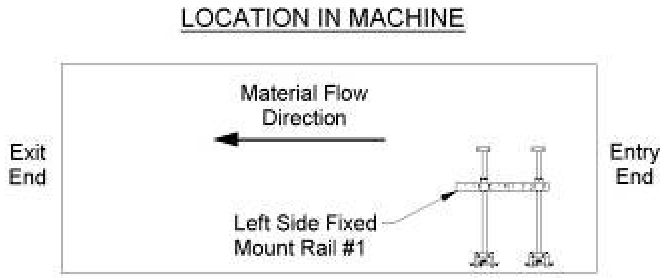



*Figure 45: Left Side Fixed Mount Rail*

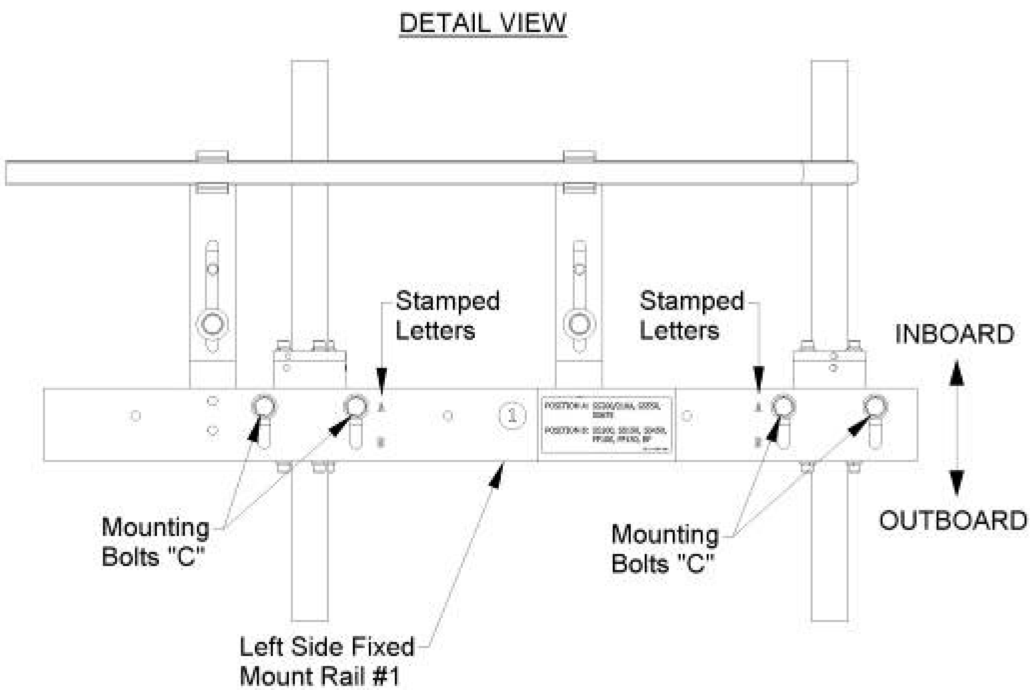



*Figure 46: Shown in the "A" position*

**7.** Find the R1 Tooling Rail and set it flat on top of the Right Side Fixed Mount Rail #1 making sure the correct number shows in Sight Hole "C" (Figure 47). Thread the two mounting bolts into the slots of the rail and finger-tighten them. Pull the Tooling Rail assembly toward the outside of the machine until the two Tooling Rail Spacers "D" contact the face of the Fixed Mount Rail. Hold it in place while tightening the mounting bolts with a ½" wrench.

CHAPTER 15

# PROFILE CHANGEOVER PROCEDURE

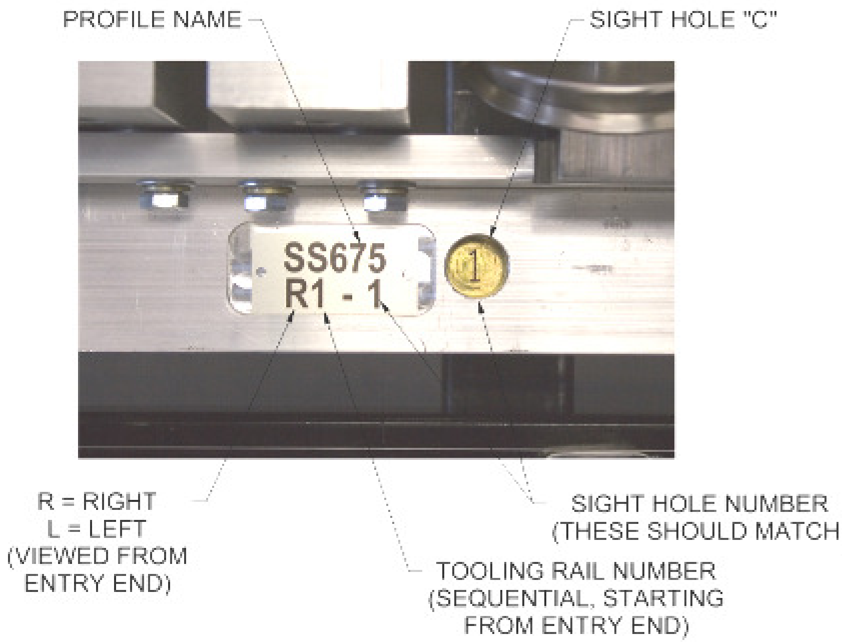



***Figure 47: Tooling Rail Identification***

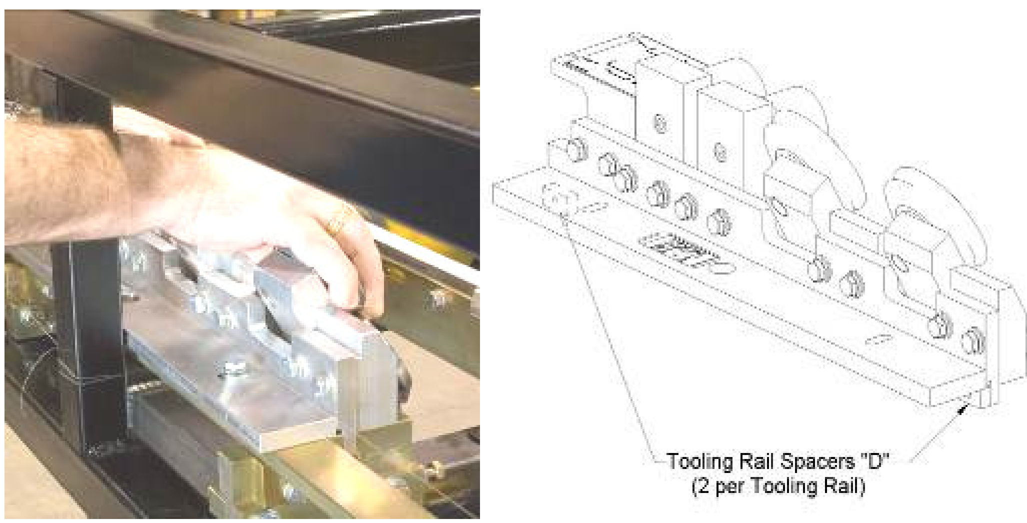



***Figure 48: R1 Tooling Rail Spacers***

**8.** Continue installing the remainder of the right and left tooling rails in sequence as described above.

**Special Instructions for the SS100, SS150, SS450, and BP Profiles:**

The Left #1 Tooling Rail Assembly (L1-1) for these profiles can be mounted in one of two possible positions based on the required height of the male leg. When mounting this Tooling Rail Assembly for use with the **SS150** or **BP 1½"** profiles pull it toward the outside of the machine until the two Tooling Rail Spacers “D” contact the face of the Left Side Fixed Mount Rail #1

(Figure 49). When mounting the Tooling Rail Assembly for use with the **SS100**, **SS450**, or **BP 1"** profiles push it toward the center of the machine until the Tooling Rail Backstops "E" contact the Left Side Fixed Mount Rail #1 (Figure 49). Once it is positioned properly, tighten the two Mounting Bolts "F" using a 1/2" wrench.

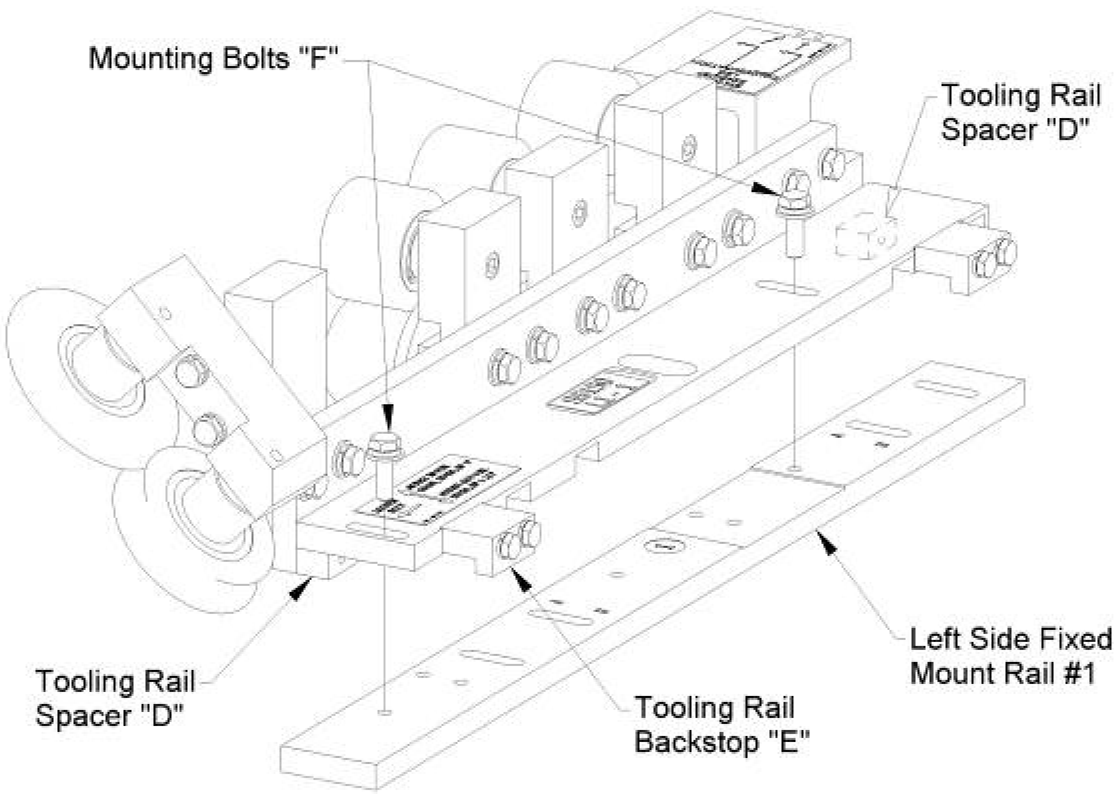



***Figure 49: L1-1 Special Instructions***

**9.** Loosen the two "A" Bolts on the Right Entry Guide (Figure 50). Slide the entry guide to the left or right until the alignment pin, located on the end of the top shoe of the entry guide, is directly under one of the notches on the Tooling Rail Marker Plate. Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the top of the marker plate.
**10.** Once the Right Entry Guide is in the correct position, tighten the two "A" bolts.
**11.** Loosen the two "A" bolts on the Left Entry Guide (Figure 50).
**12.** Slide the entry guide to the left or right to accept the new coil width. Make sure that the coil is captured snugly between the entry guides and re-tighten the two "A" bolts.

# PROFILE CHANGEOVER PROCEDURE

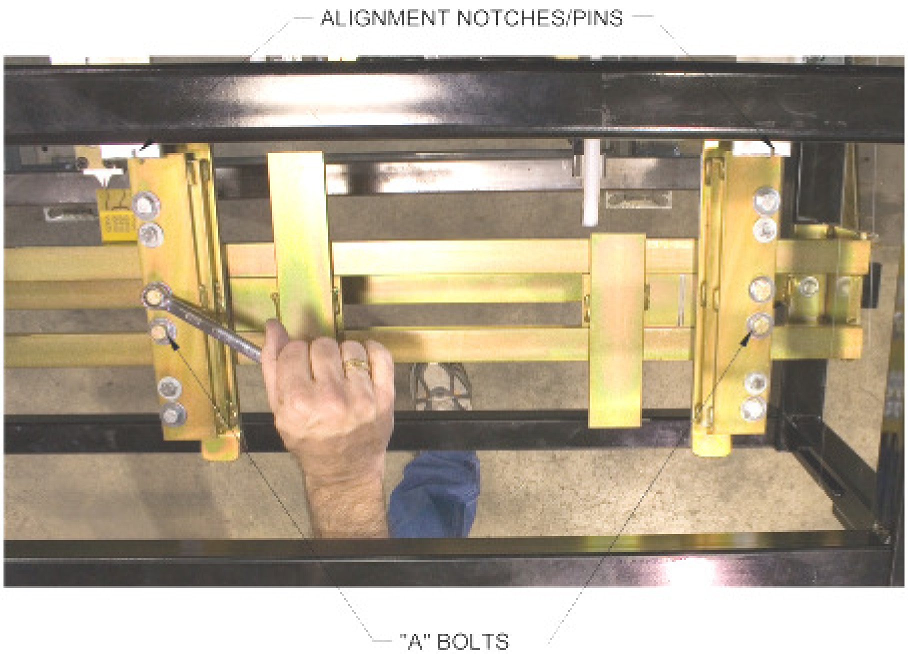



***Figure 50: Entry Guide Alignment Notches and Pins***

**13.** Using the Tooling Rail Adjustment Handle (Figure 51), align the notch on the tooling rail marker plate to the alignment pin (Figure 25 on page 38) located in the Left Entry Guide. Make sure to choose the notch that corresponds to the desired leg configuration as noted on the decal on the marker plate. Turning the handle clockwise moves the tooling out-ward, turning it counter-clockwise moves move it in-ward.



***Figure 51: Tooling Rail Adjustment Handle***

**14.** Load material onto the Expandable Arbor and align it to the correct position (Figure 10).

# PROFILE CHANGEOVER PROCEDURE

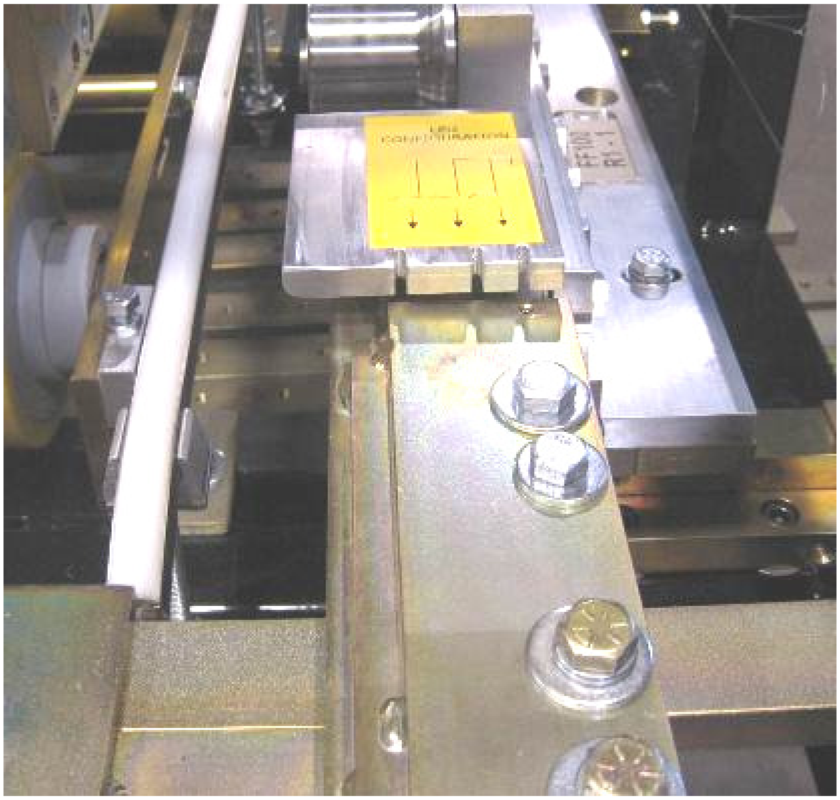


*Figure 52: Marker Plate Notch and Pin*

**15.** Load the reeled coil onto the machine using a fork lift or other rated lifting device.
**16.** Cut a 1” triangle of material off the 2 leading corners of the coil and feed it into the entry guides.



*Figure 53: Preparing Coil for Loading*

# PROFILE CHANGEOVER PROCEDURE

**17.** Start the machine and use the Jog button on the Manual Control Box or Computer to jog the material through the machine 6 to 8 inches at a time until it exits the last forming stations, and is about 1" from the Bead Roller Assembly (Figure 54).



***Figure 54: Jogging Material thru Machine***

**CAUTION:** ***Always make sure your machine is shut down prior to making any adjustments.*** **DO NOT** ***reach through the opening of the shear while the machine is running.*** **EVER! To do so could result in serious injury.**

***IF YOU NEED BEADS IN THE PANEL, GO TO STEP 18***

***IF YOU DO NOT NEED BEADS IN THE PANEL, GO TO STEP 21.***

**18.** If you require beads in the panel, determine the spacing needed. For Example: a 12" wide panel with 2 beads centered on the panel would give you 3 equal spaces or 12" divided by 3, which equals 4" from center to center of each bead. Hook the end of your tape measure on the outside bottom corner of the female leg. Use a magic marker or grease pencil to mark the 4" and 8" locations on the panel. You now have 3 equal spaces. (Figure 55)

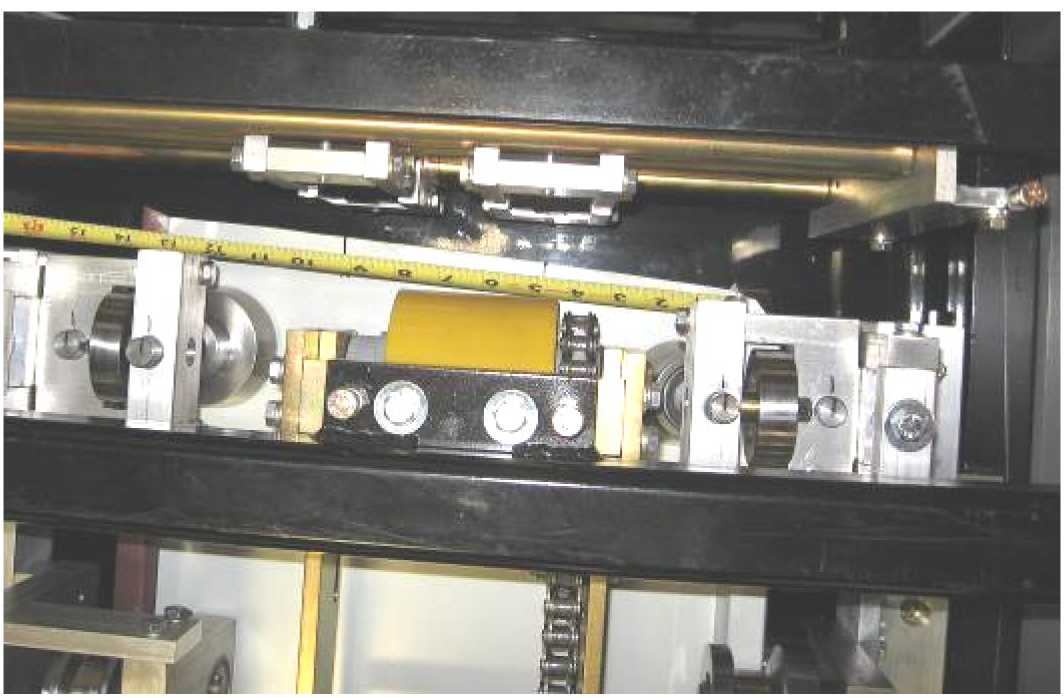


***Figure 55: Spacing Bead Rollers***

**19.** Loosen the Slide Lock Bolts “D” on the top and bottom bead assemblies (Figure 21) and slide each bottom and top roll assembly left or right to center them on the 4” and 8” marks on the panel.

**20.** Lock the two top bead assemblies in the correct position by tightening the “D” bolt on each assembly (Figure 21). Next align the bottom bead rollers to the tops so that the ends of the top and bottom rollers are flush with each other and tighten the bottom “D” bolts on these 2 assemblies.

**21.** Using a 7/16” wrench, remove the Shear Cover and set aside.




***Figure 56: Removing Shear Cover***

**22.** Remove the two “C” bolts on the exit male and female shear die assemblies located in the slotted holes at the bottom edge of the die holder (Figure 57). Store the shear dies with the profile you just removed, and set the bolts aside for use when installing the new shear dies.

# PROFILE CHANGEOVER PROCEDURE

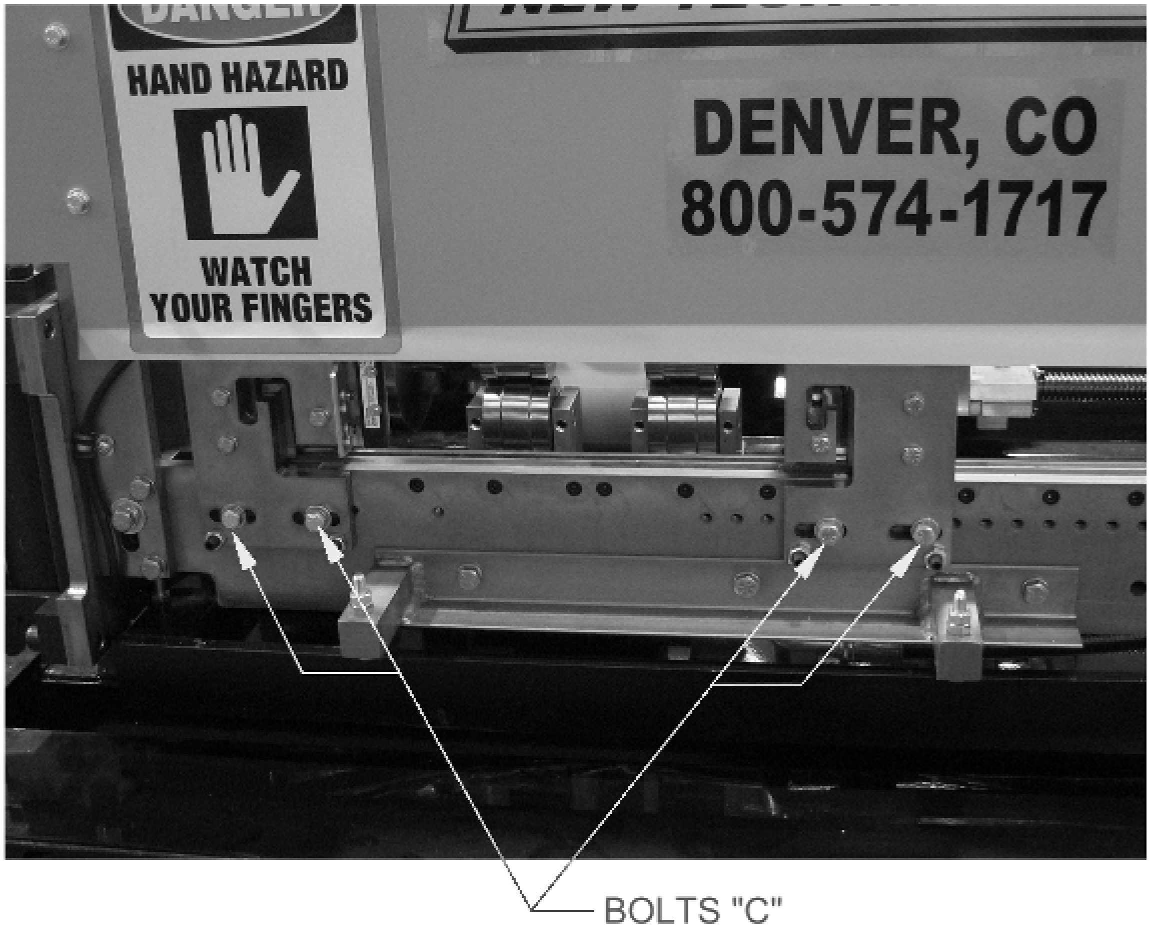



***Figure 57: Remove Shear Bolts***

**23.** Remove the two “C” bolts from the slotted holes on the entry male and female shear die assemblies as described previously.
**24.** Locate the shear dies that correspond to the profile you have just installed. Separate the male and female entry and exit shear dies.
**25.** Set the Male Entry Die on top of the Bottom Die (Figure 20 - Detail A on page 32). Visually sight through the male entry die and roughly align it to the forming tool “line of fire” by sliding it left or right. Re-install the two “C” bolts into the holes that correspond to the slots. Do not tighten the bolts at this time, just snug them up.
**26.** Install the male exit die in the same manner aligning it to the entry die and again, just snug the bolts.
**27.** Repeat steps 23 through 26 for the Female Dies.
**28.** Start the machine and carefully jog the panel up to the shear. Check to see if the panel will pass through the entry male and female shear dies. If not, **FIRST SHUT THE MACHINE OFF,** then move the male and/or female entry dies so that the panel will pass through them.
Adjust the entry die so that it is as close to the outside vertical portion of the leg as possible without touching it. Once this is done, tighten the two “C” bolts on these assemblies.
**29.** Check the exit male and female shear dies to ensure that the material will pass through them. If not, adjust as necessary.

# PROFILE CHANGEOVER PROCEDURE

**30.** Start the machine again and slowly jog the panel approximately 6” past the exit die and stop. Again, **TURN THE MACHINE OFF.**

**31.** Adjust the male and female exit dies so that they are offset to the outside of the entry die by approximately 1/64” and lock down the two “C” bolts (Figure 58) on each assembly. ***This offset is necessary so that after a cut is made, the leading edge of the panel does not hang up on the exit die.***

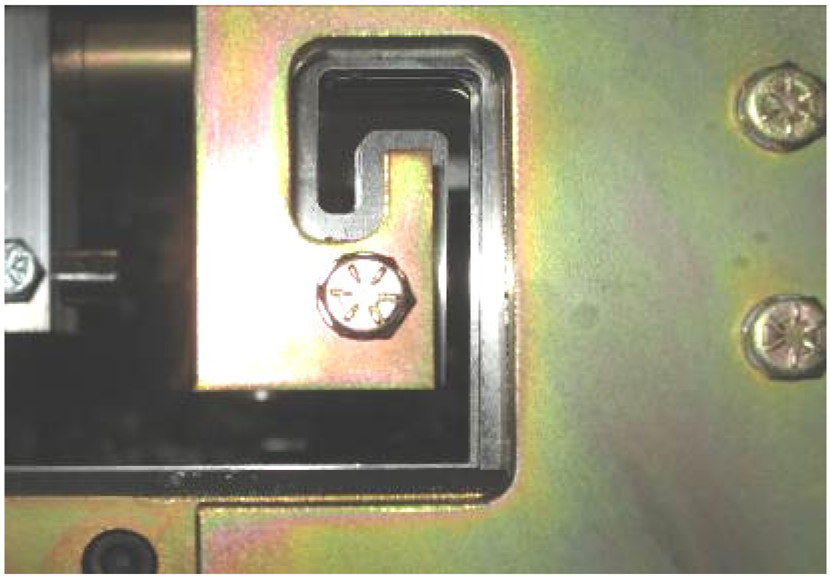


***Figure 58: Exit Die Adjustment***

**32.** Look down the leg of the panel and make sure that the entry and exit dies are not touching the panel as it passes through them.

**33.** Start the machine and press the shear down button to cut off the panel, then jog the material through the shear approximately 2” and stop.

**34.** Inspect the two cuts and adjust the dies as necessary until an acceptable cut is achieved. Again, **TURN THE MACHINE OFF BEFORE MAKING ANY ADJUSTMENTS! NEVER REACH THROUGH THE SHEAR WHILE THE MACHINE IS RUNNING. SERIOUS INJURY COULD RESULT!**

**35.** Once the cut is acceptable, you are ready to start panel production.

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

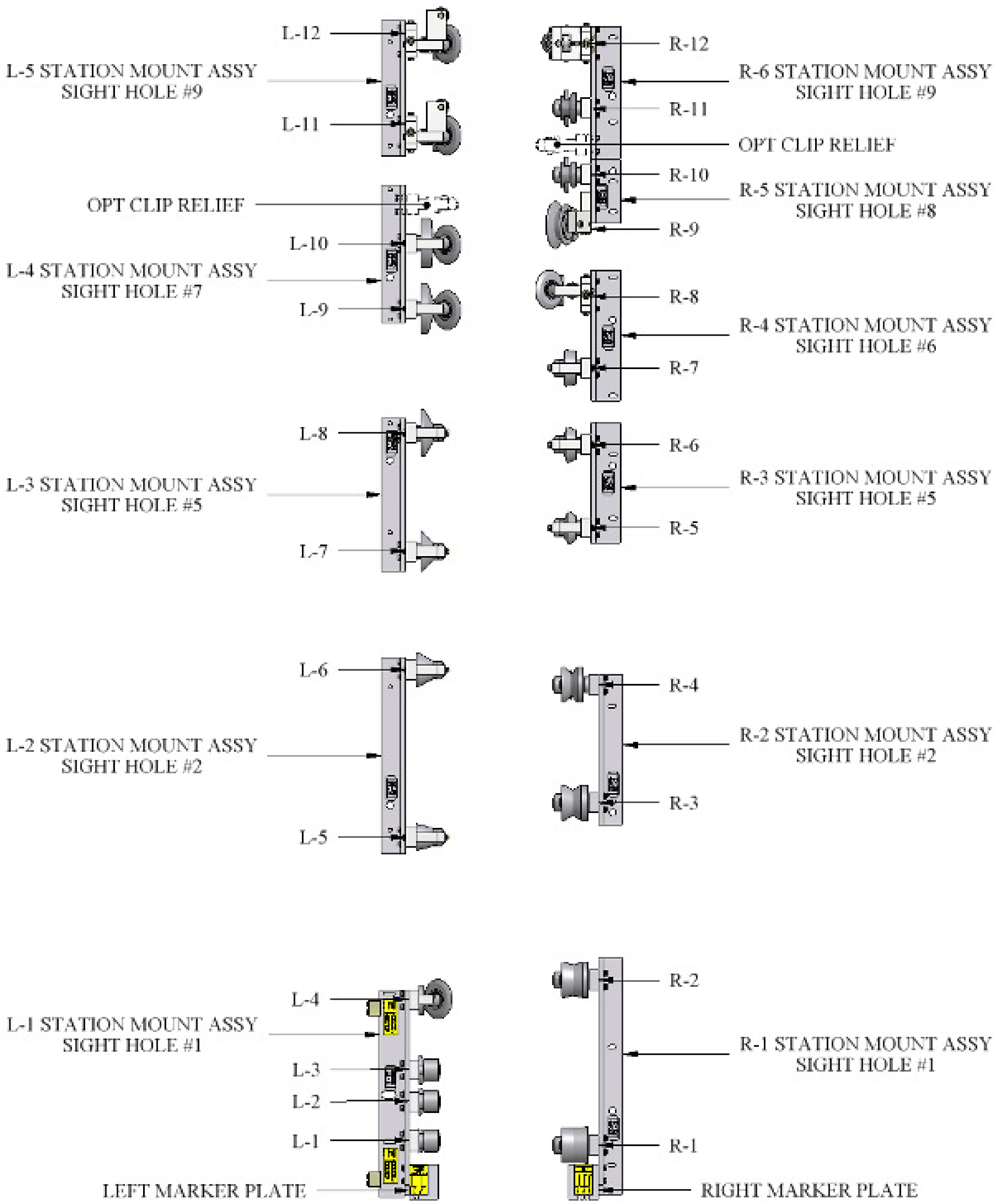



***Figure 59: SSQ100 Roller System***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

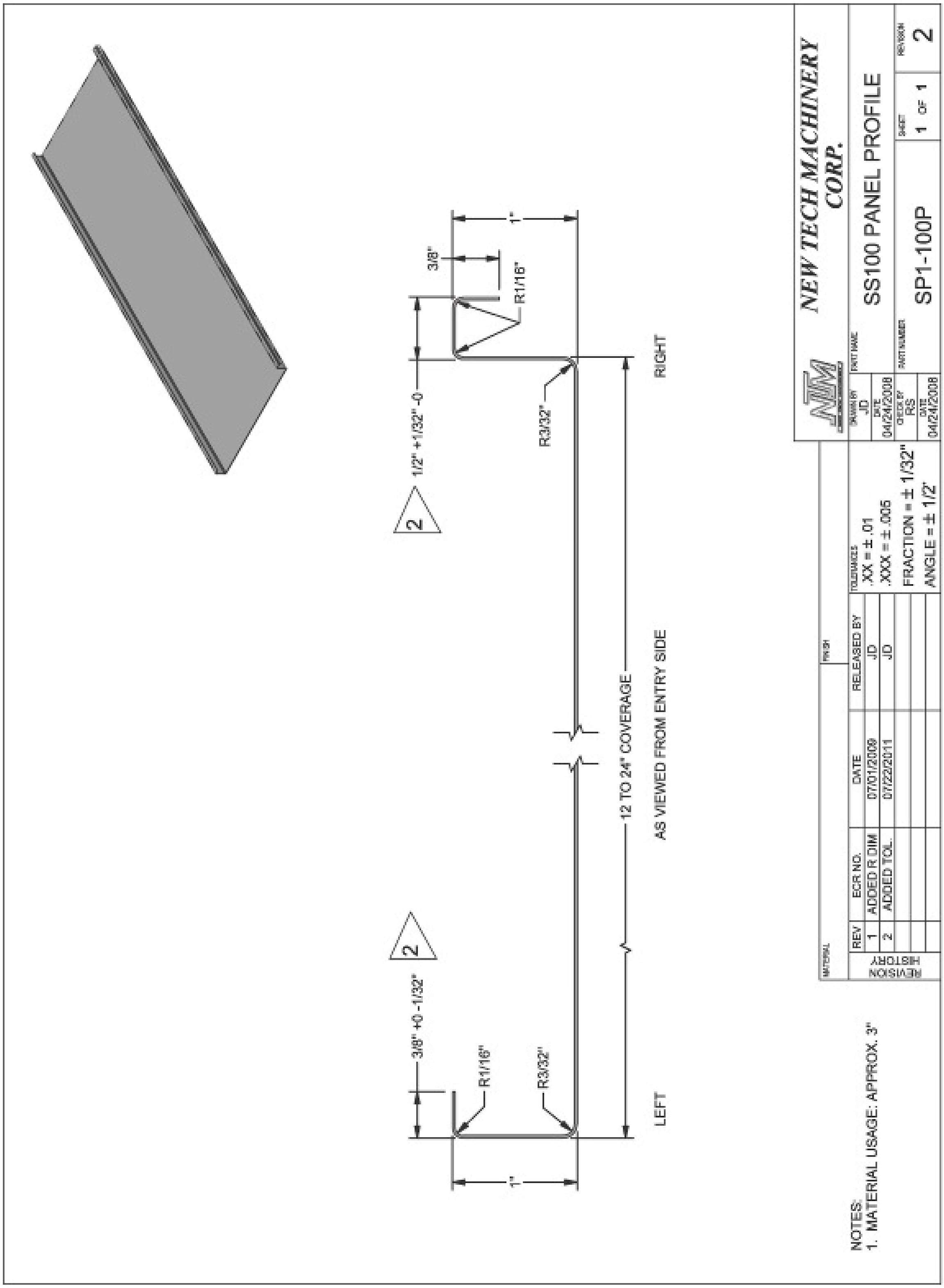



*Figure 60: SS100 Panel Profile*

# CHAPTER 16

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

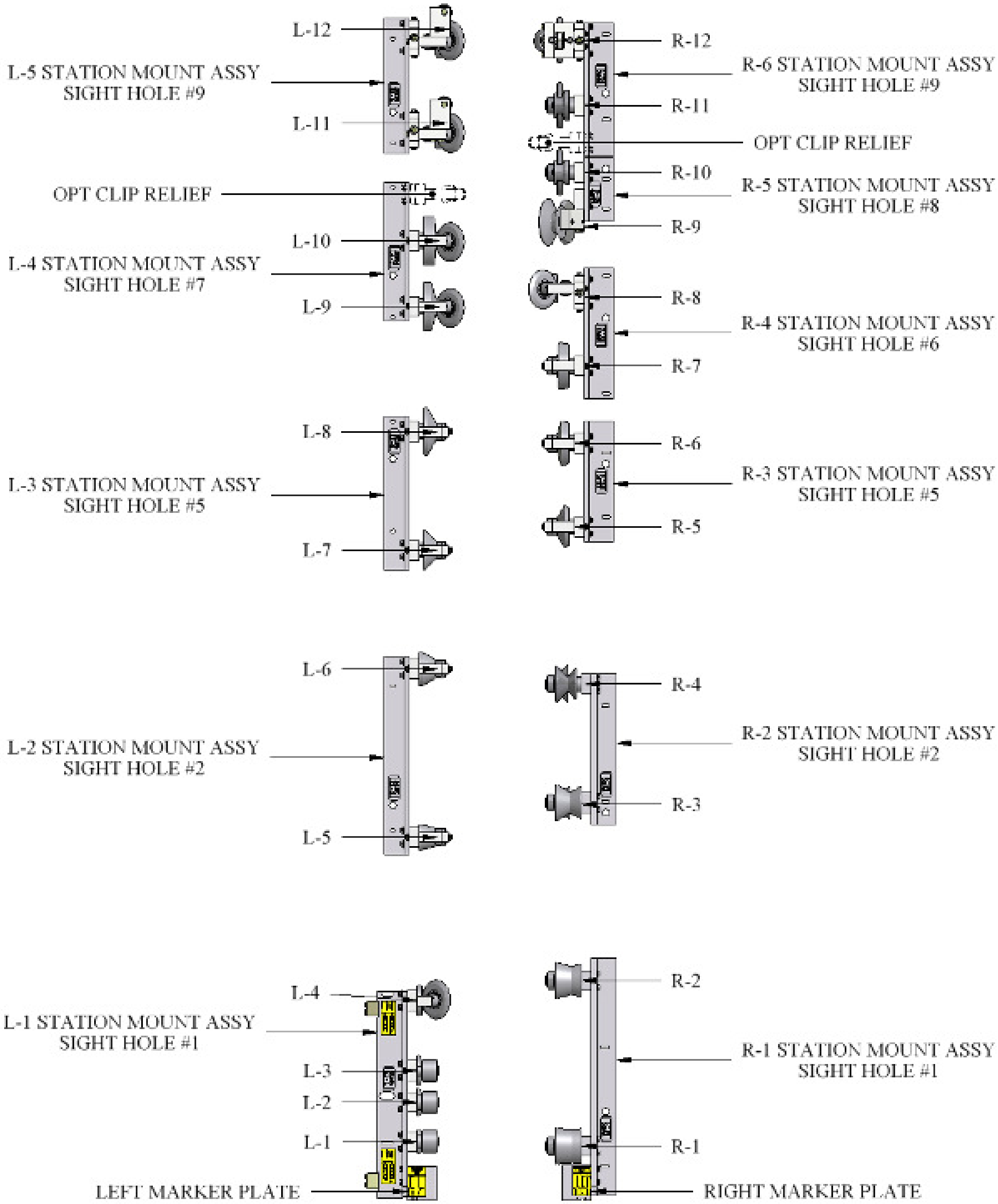



***Figure 61: SSQ150 Roller System***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

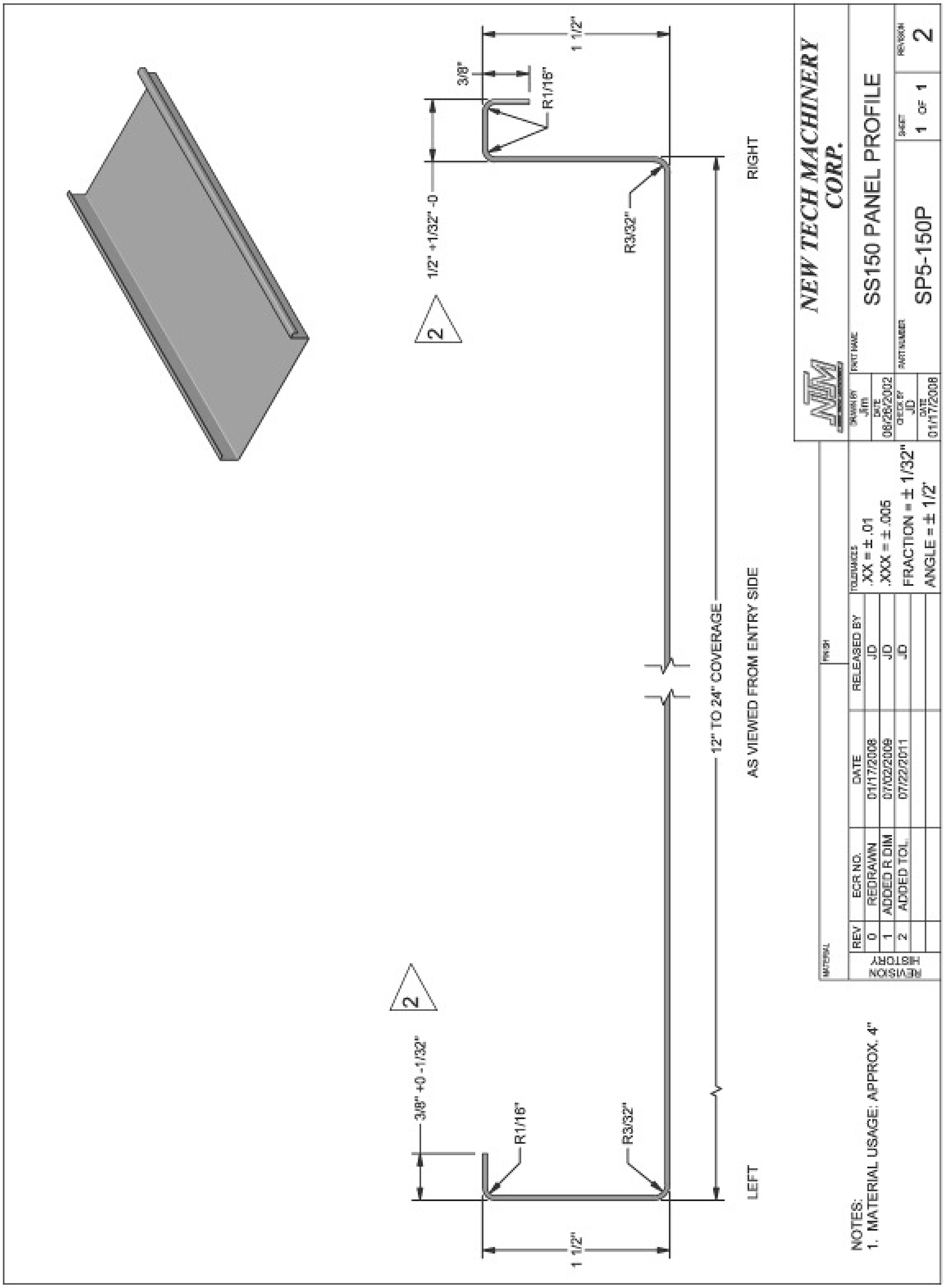



***Figure 62: SS150 Panel Profile***

CHAPTER 16

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

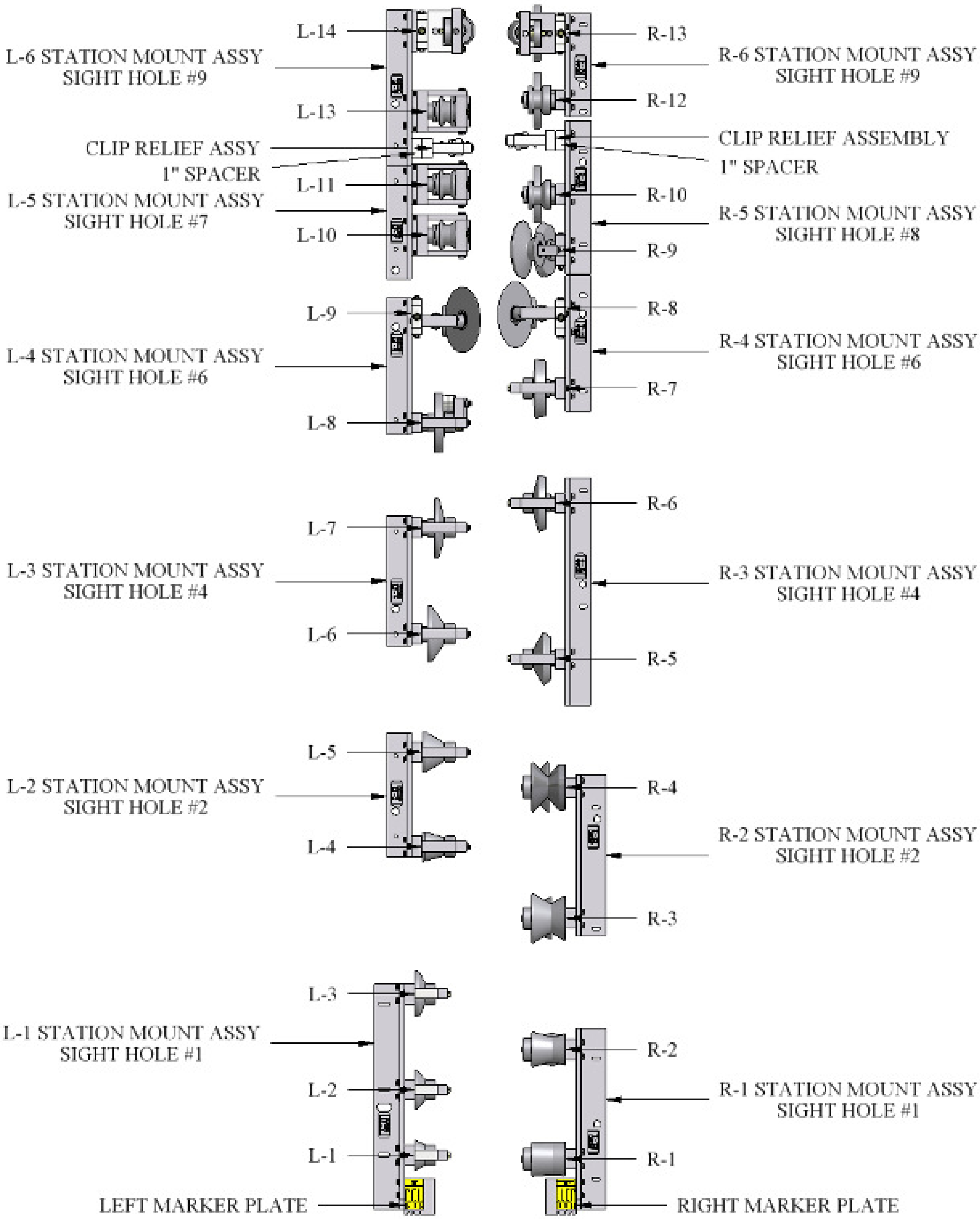



***Figure 63: SSQ200/210A Roller System***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

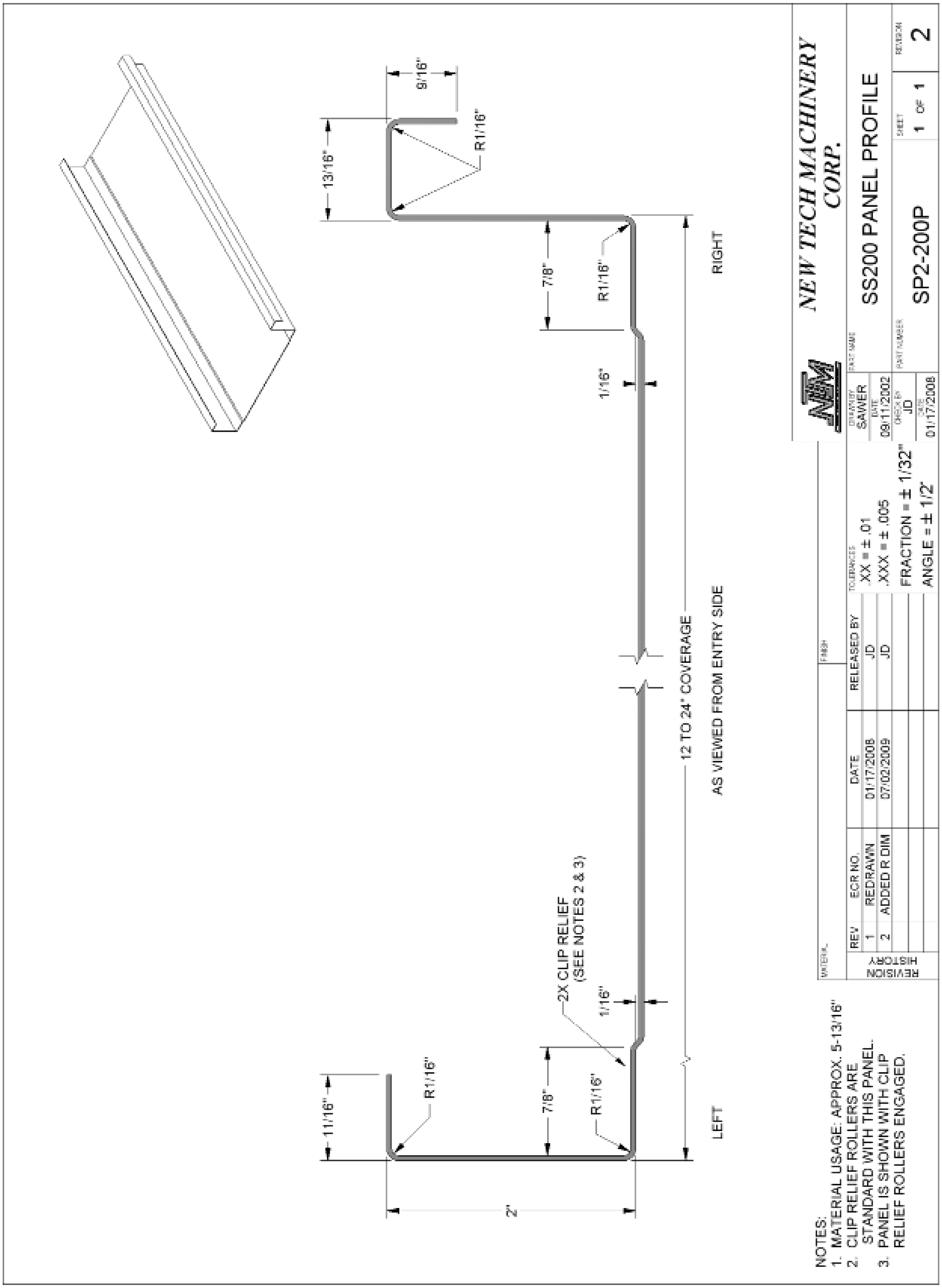



*Figure 64: SS200 Panel Profile*

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

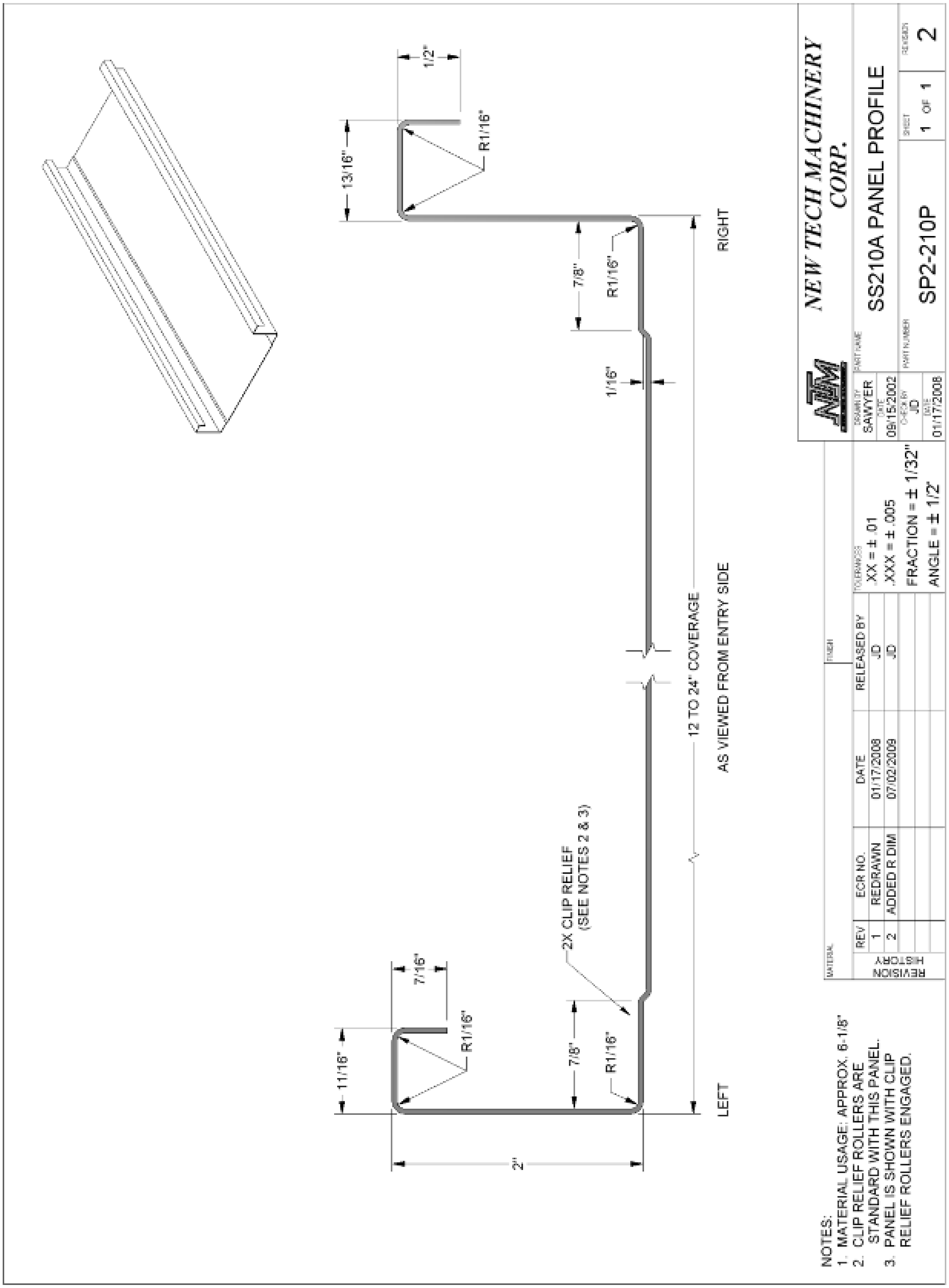



***Figure 65: SS210 Panel Profile***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

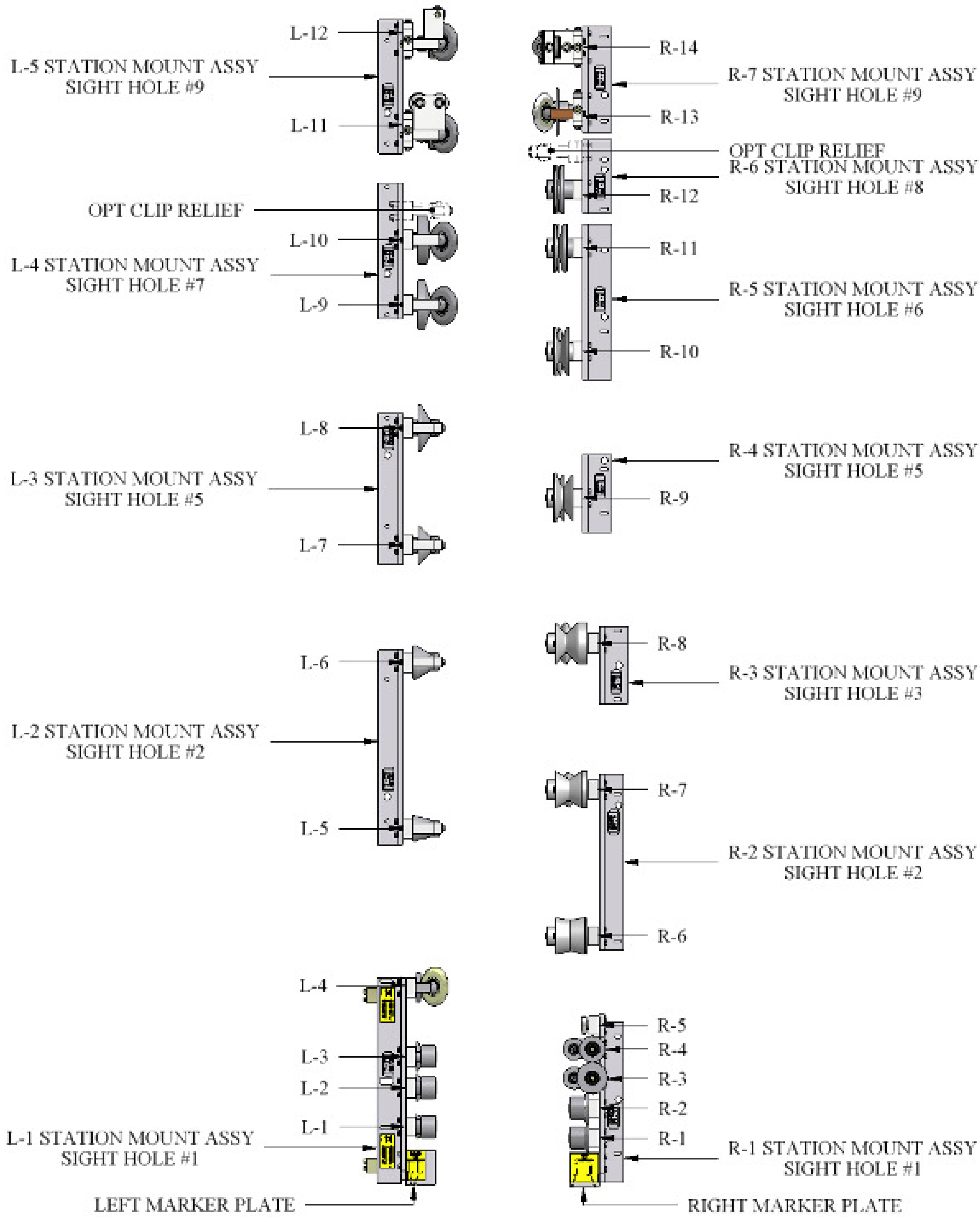



***Figure 66: SSQ450/450SL Roller System***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

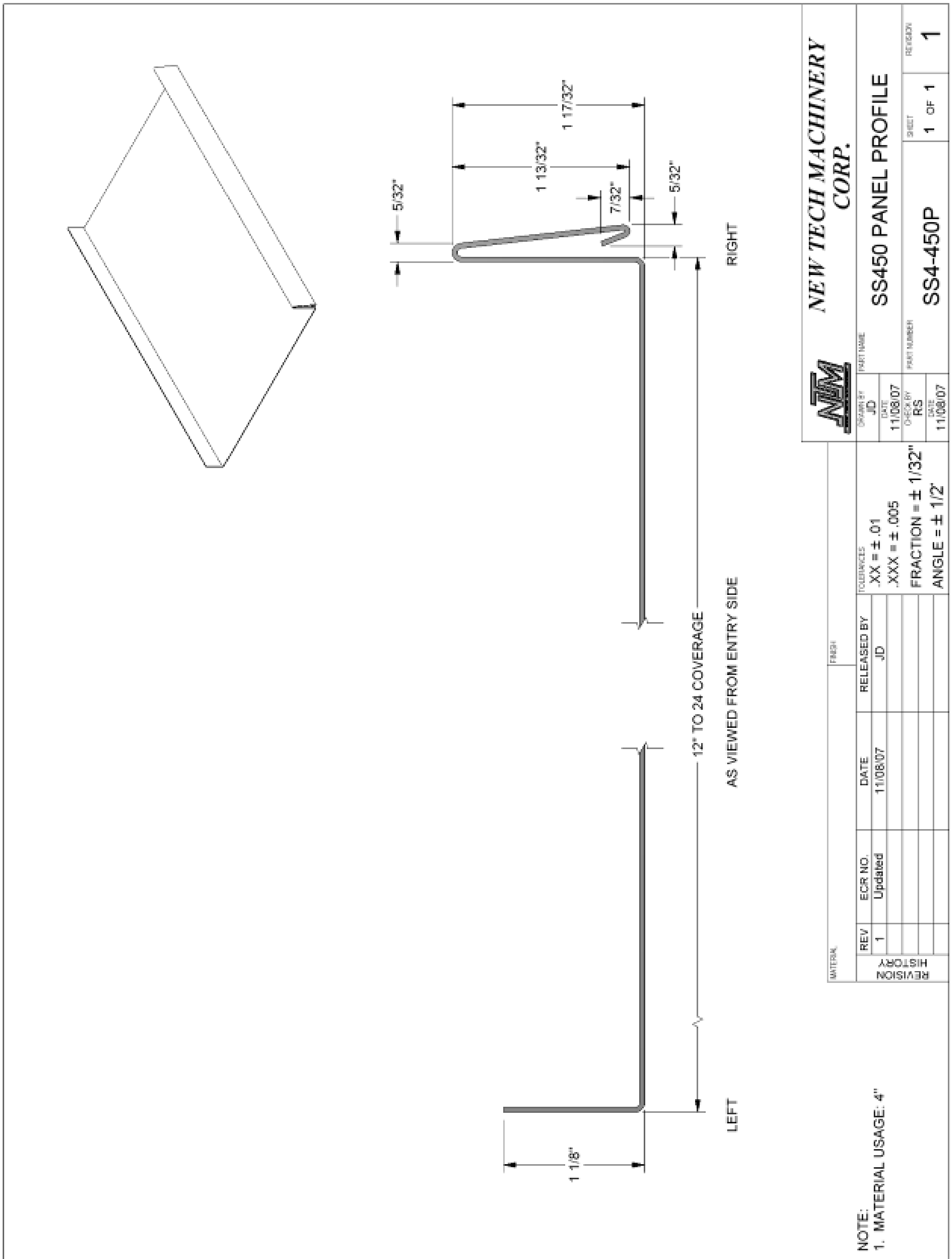



***Figure 67: SS450 Panel Profile***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

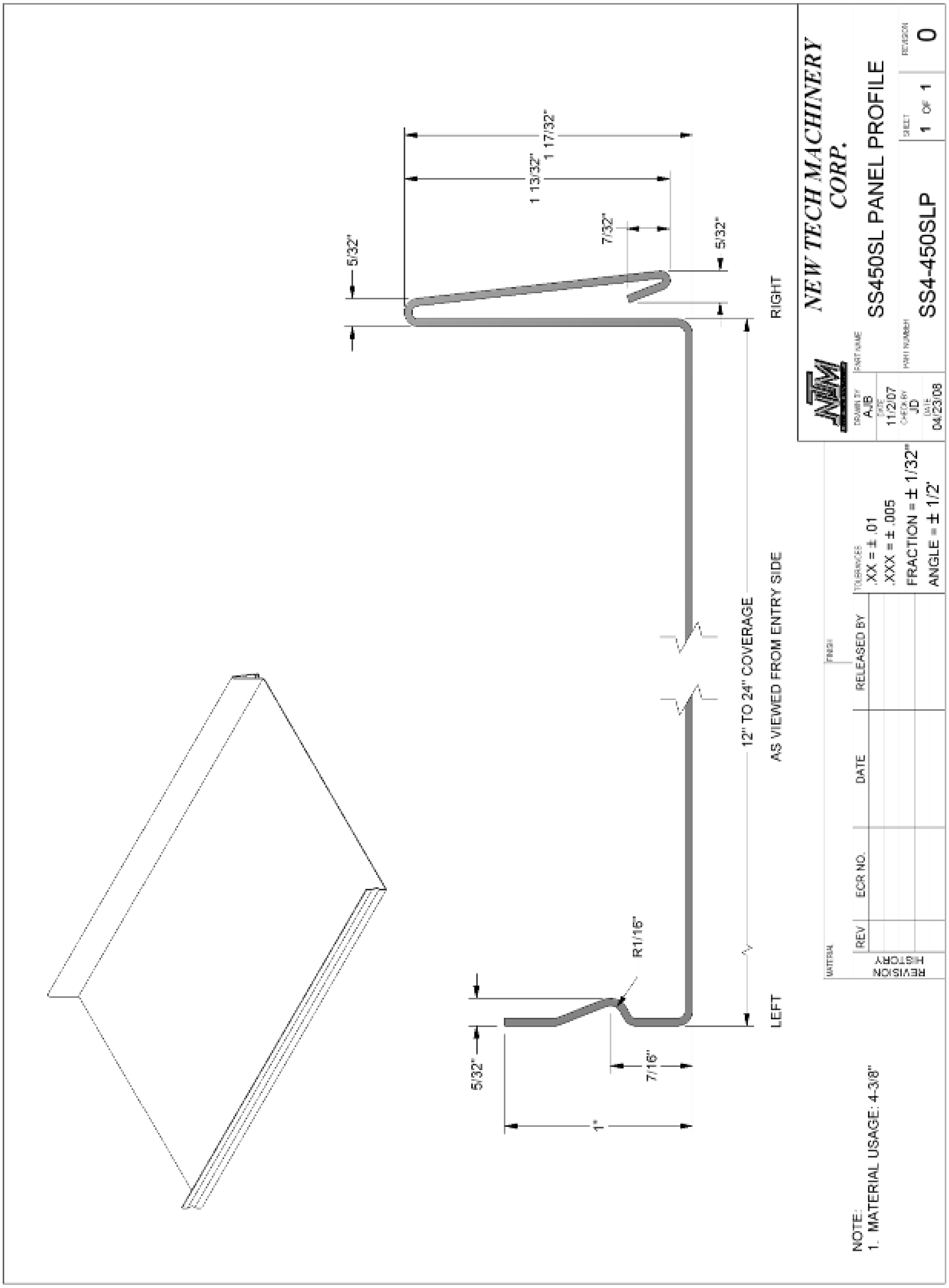



*Figure 68: SS450SL Panel Profile*

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

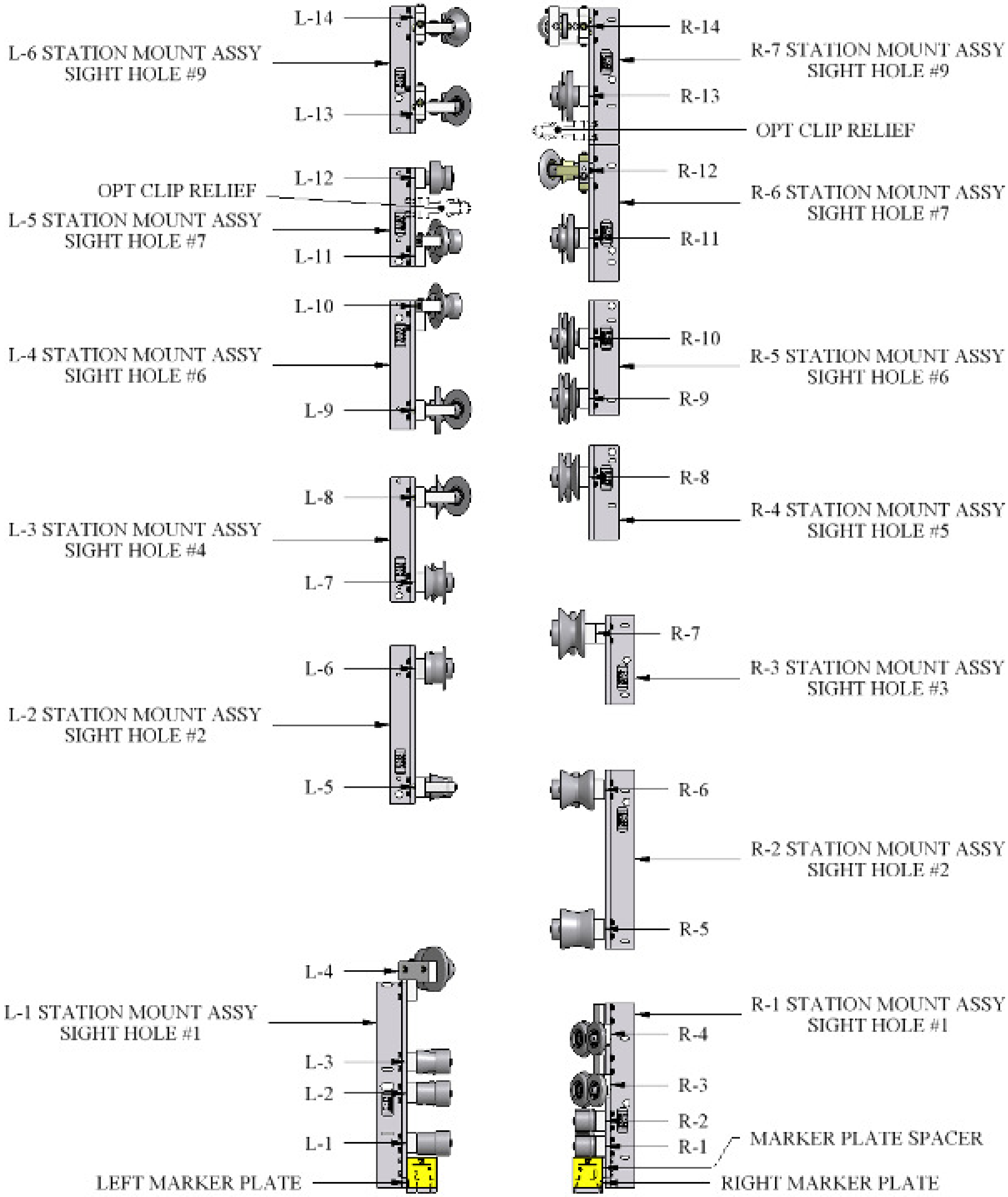



*Figure 69: SSQ550 Roller System*

CHAPTER 16

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

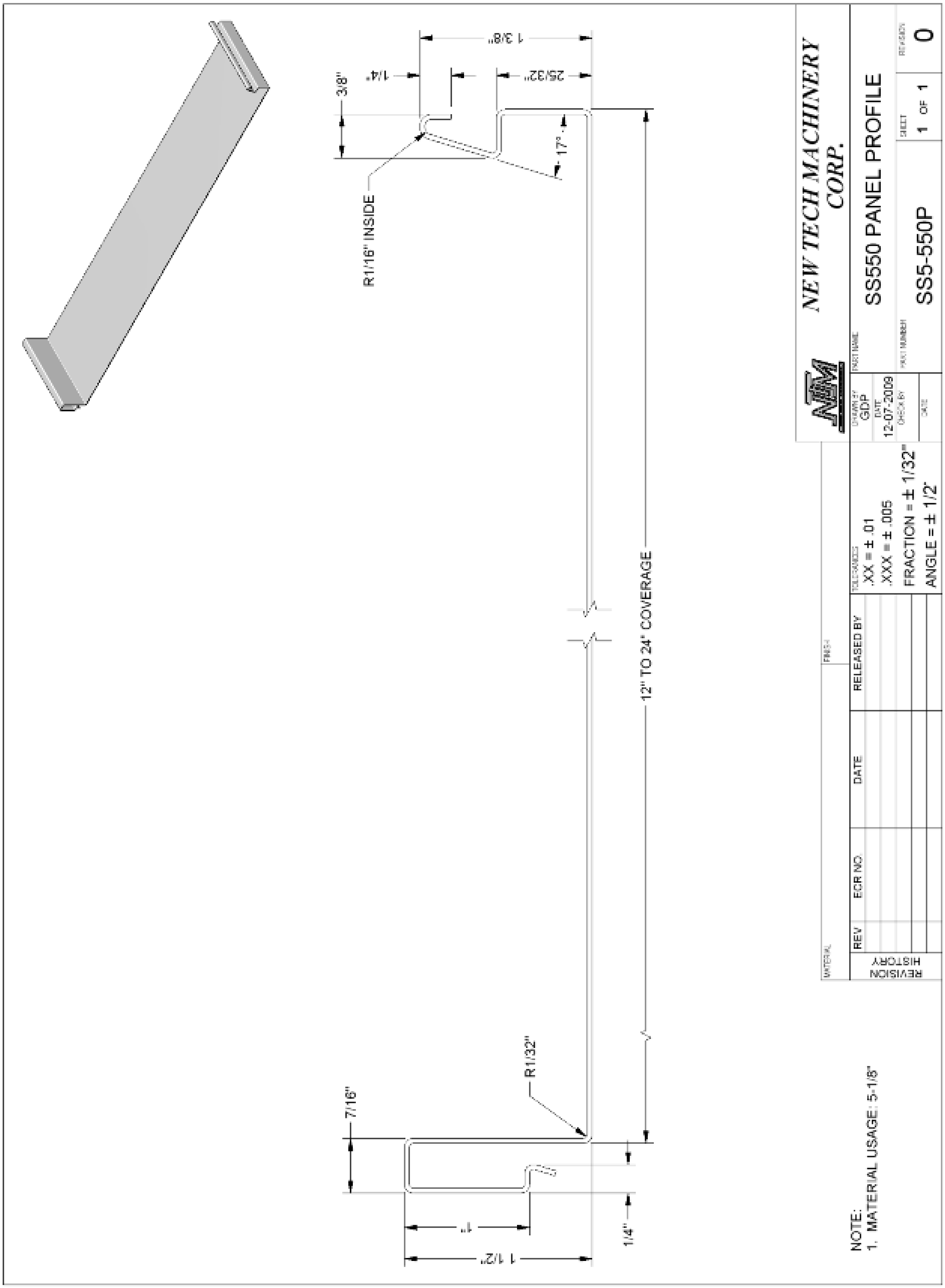



***Figure 70: SS550 Panel Profile***

CHAPTER 16

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

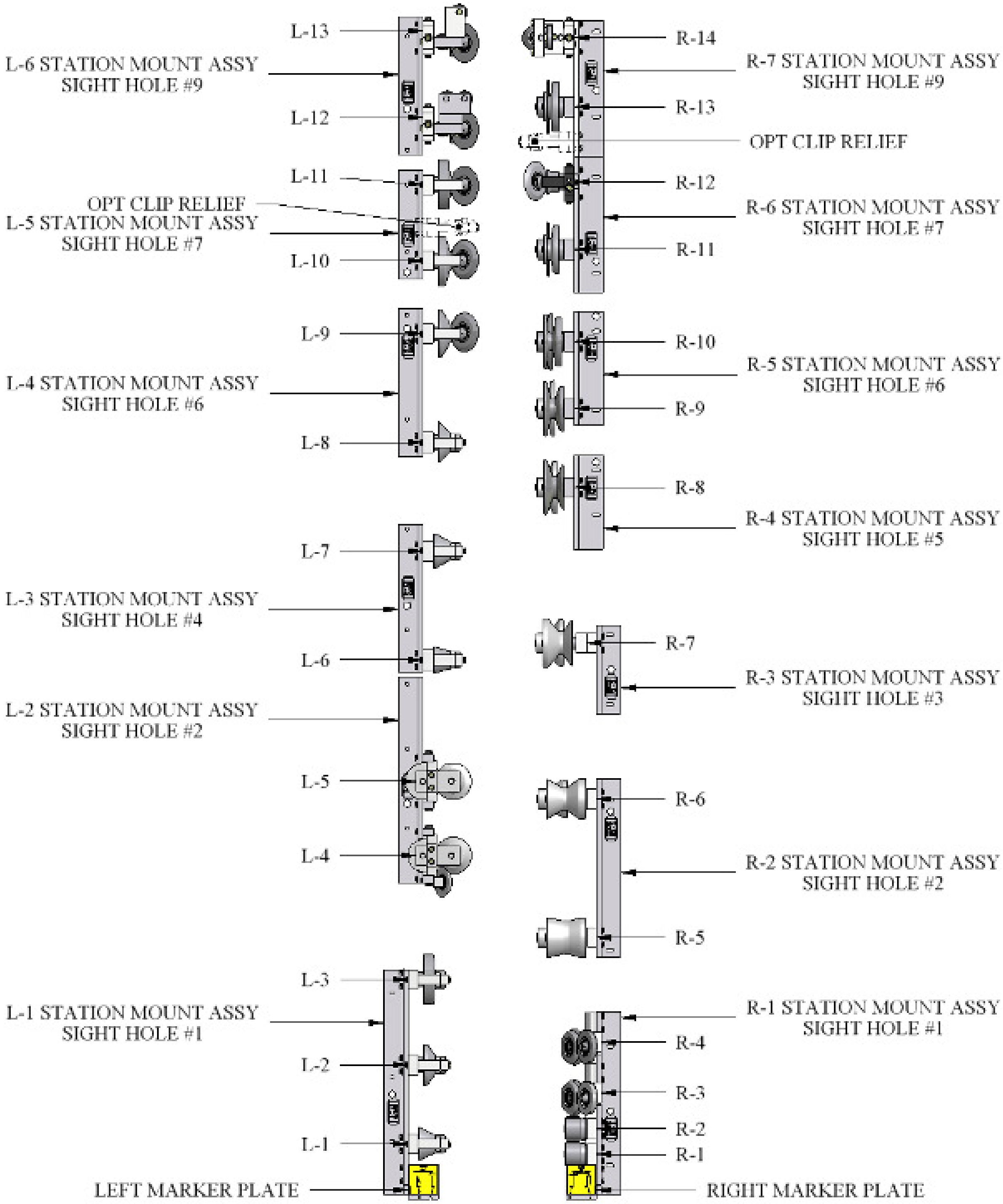



***Figure 71: SSQ675 Roller System***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

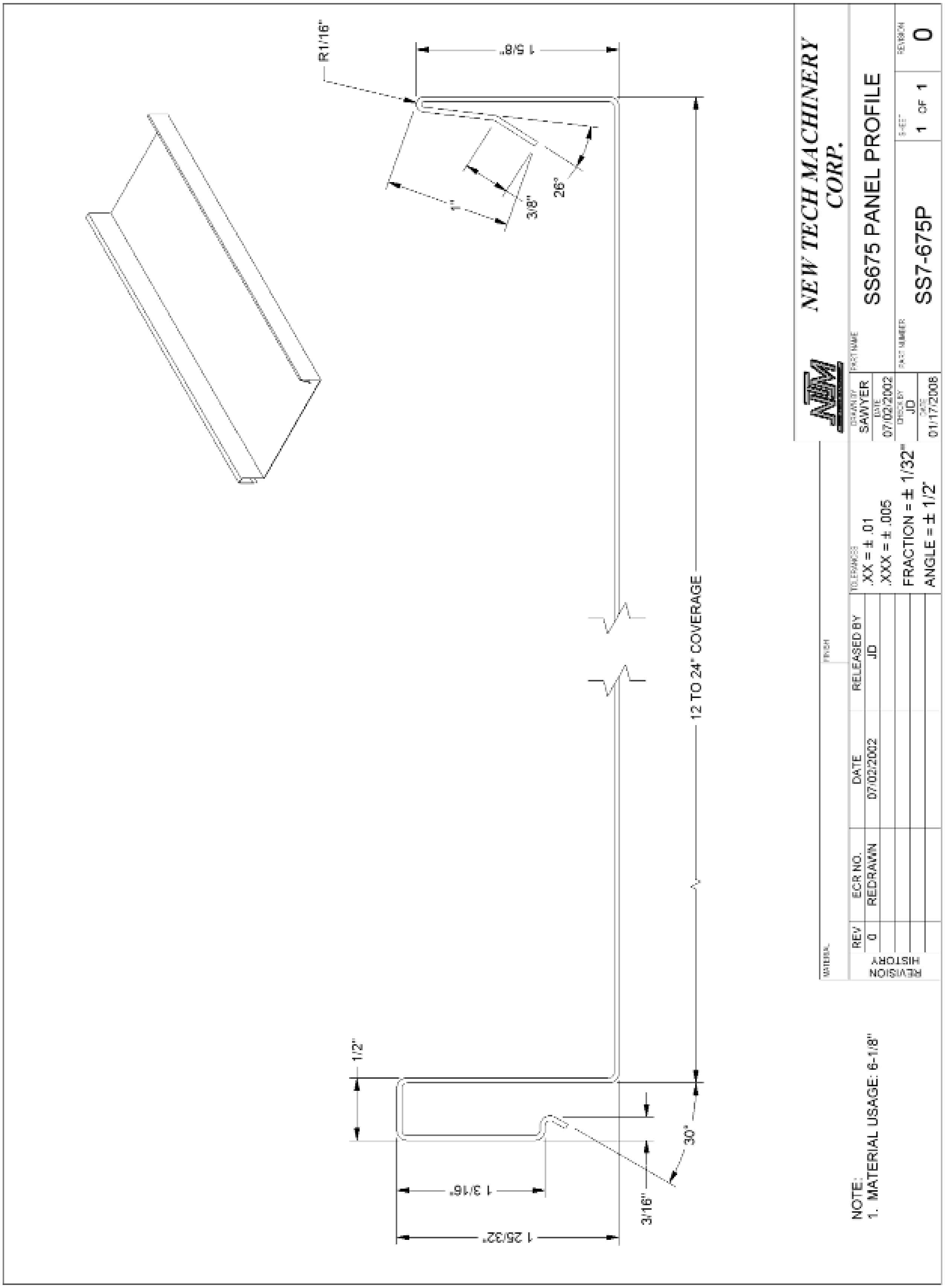



***Figure 72: SS675 Panel Profile***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

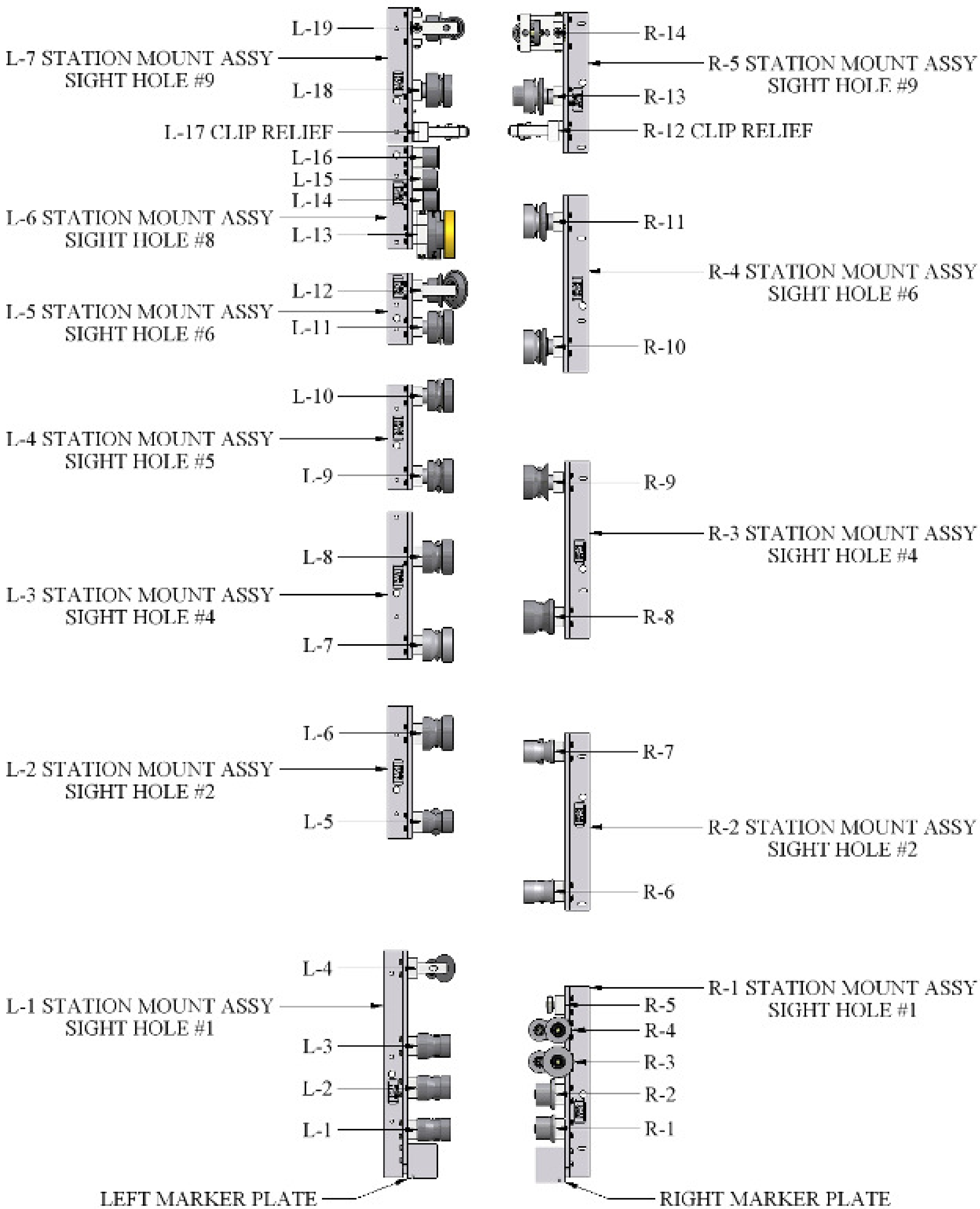



***Figure 73: FFQ100 Roller System***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

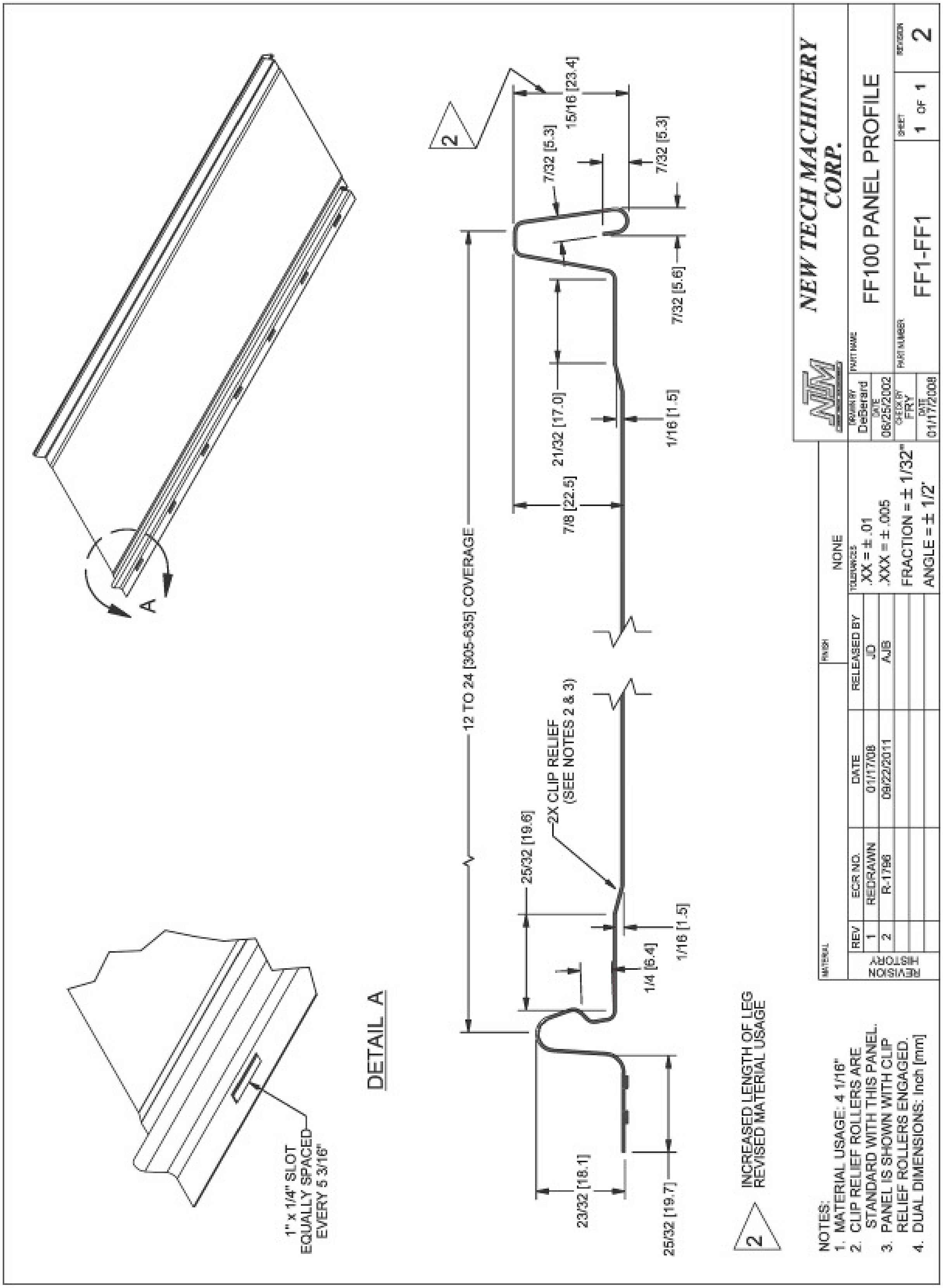



*Figure 74: FF100 Panel*

CHAPTER 16

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

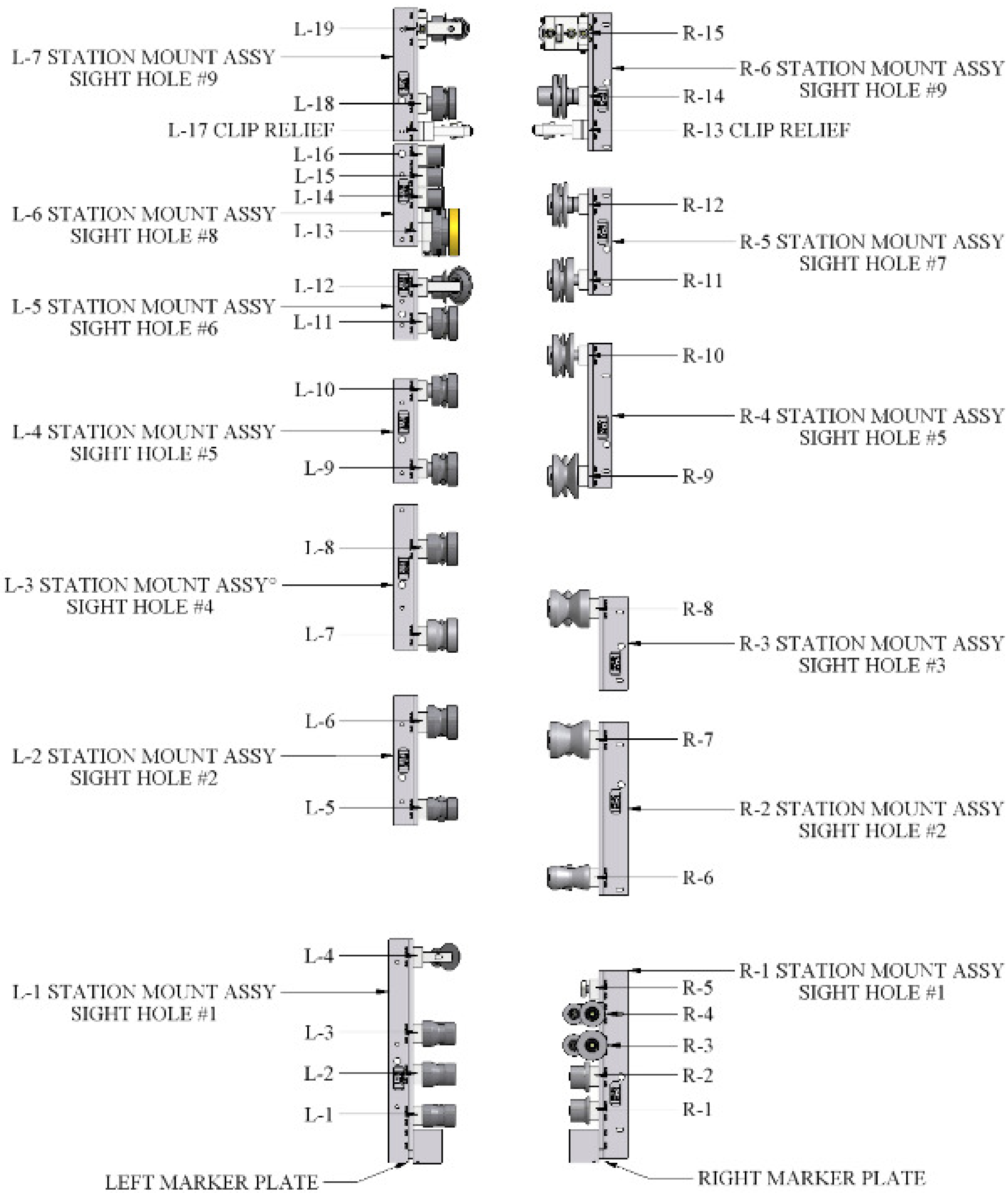



***Figure 75: FFQ150 Roller System***

CHAPTER 16

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

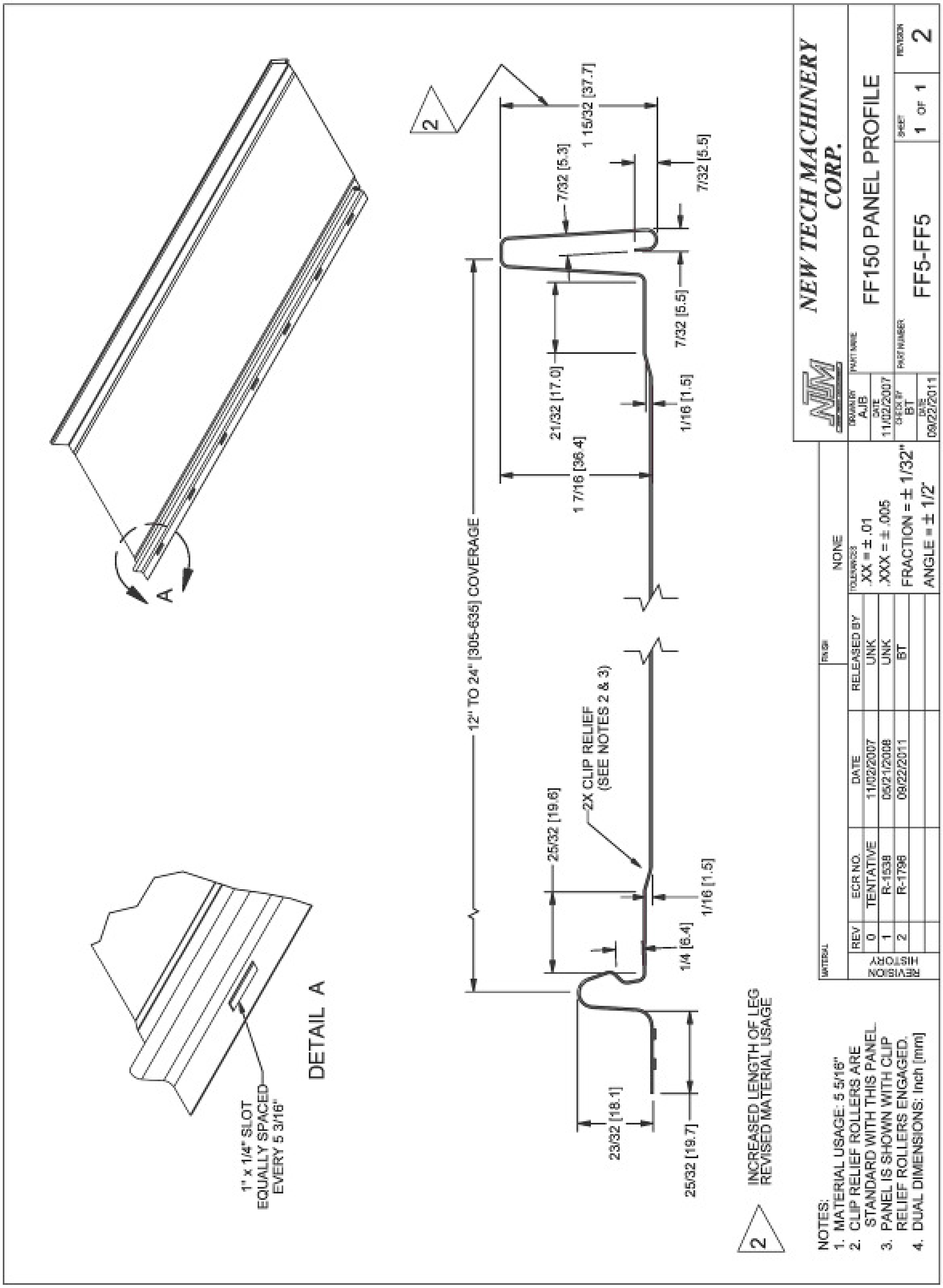



*Figure 76: FF150 Panel Profile*

CHAPTER 16

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

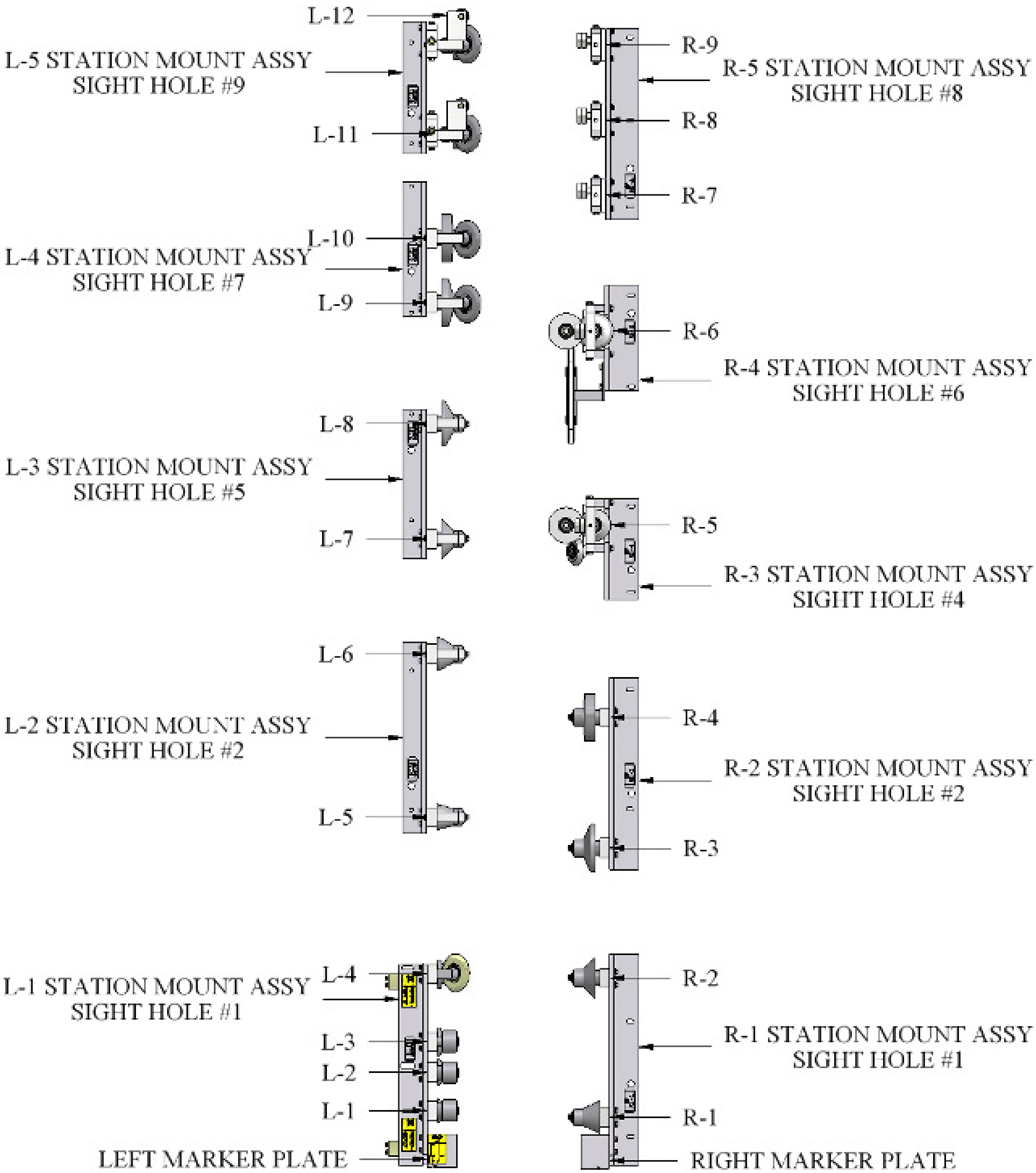



***Figure 77: SSQBP Roller System***

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

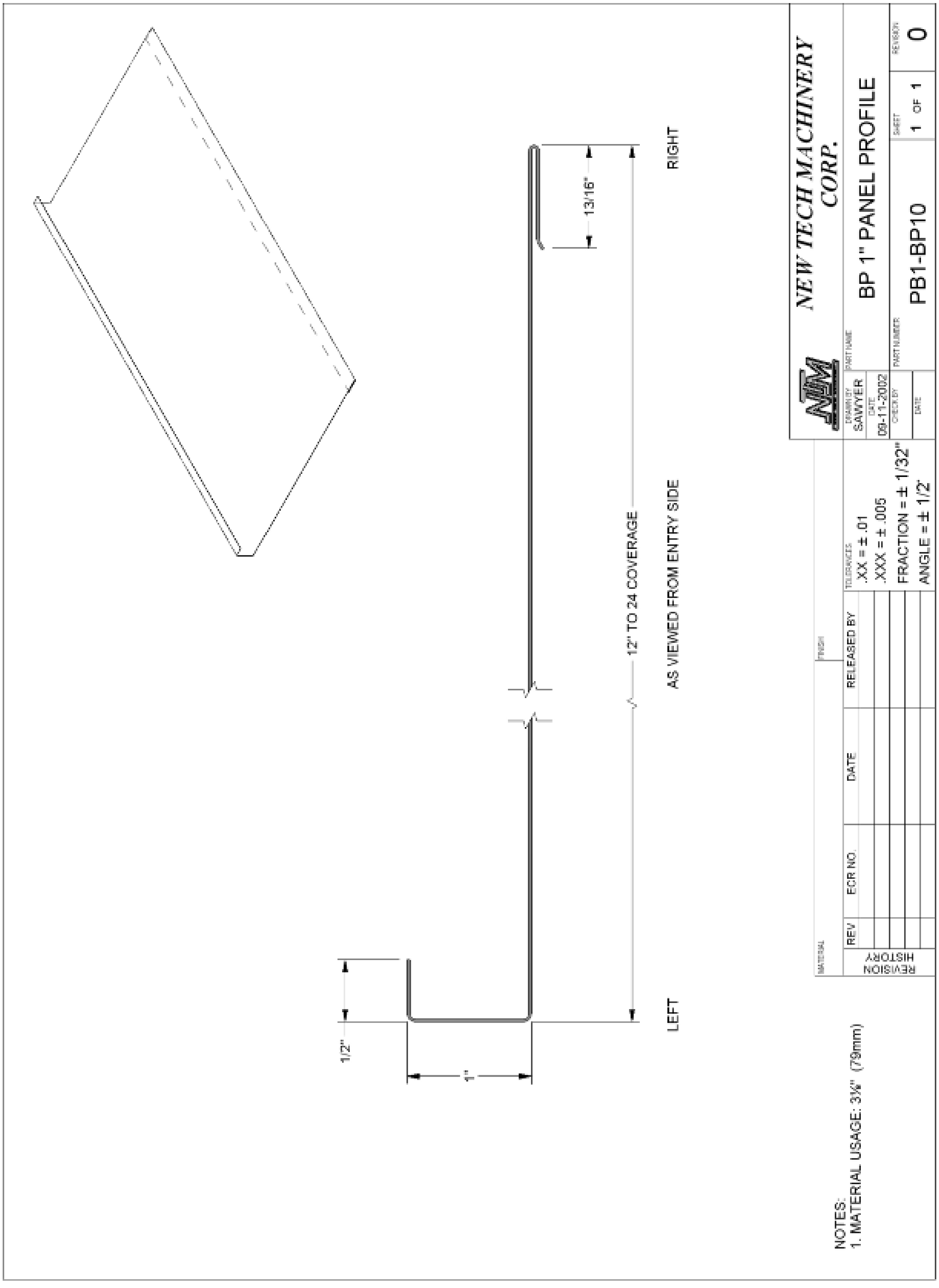



*Figure 78: BP 1" Panel*

# ROLLER SYSTEMS AND PANEL PROFILE DRAWINGS

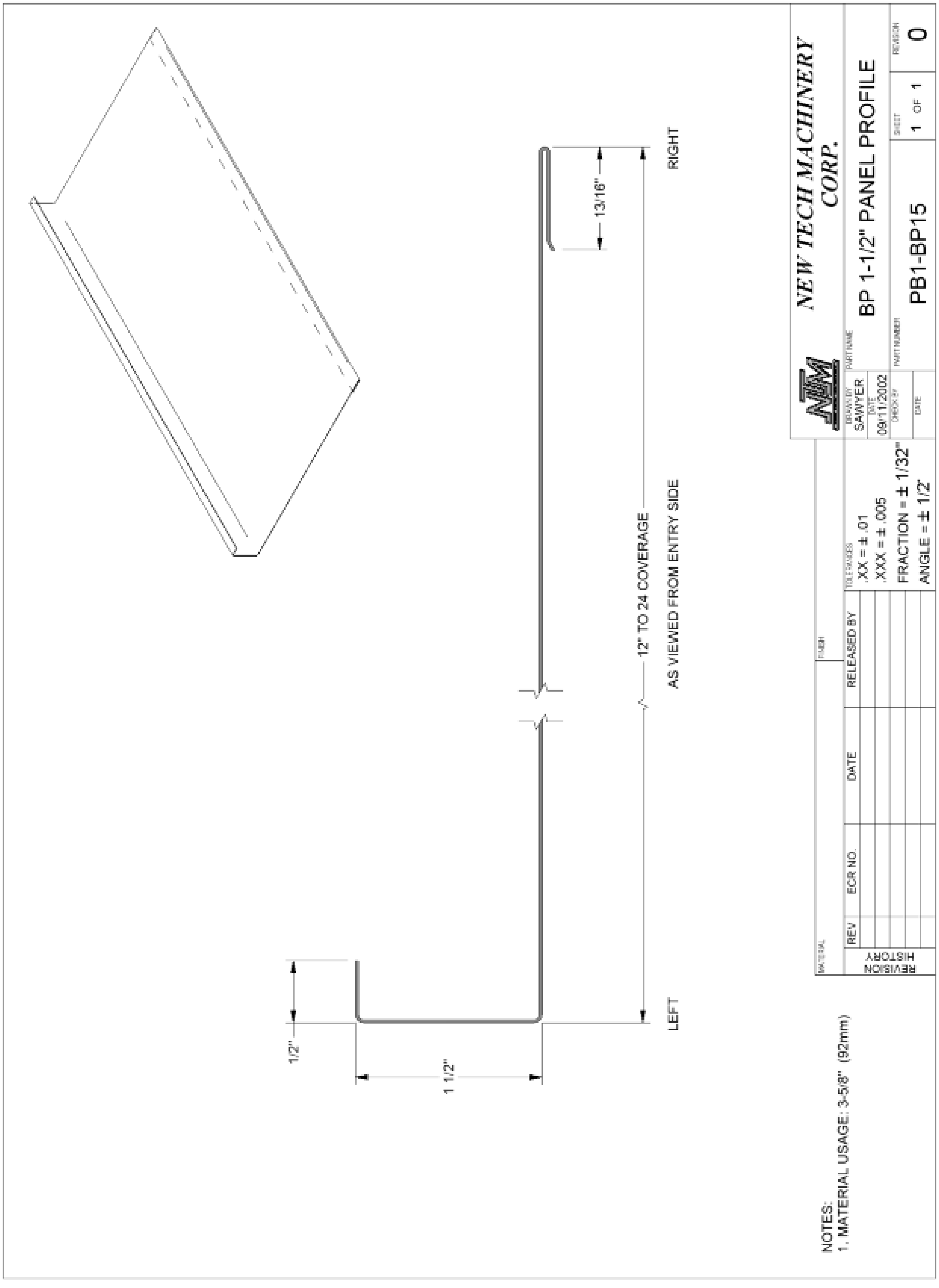



***Figure 79: BP 1 1/2" Panel***

CHAPTER 17

# RUN OUT TABLES AND REMOTE LIMIT SWITCH

## RUN OUT TABLES AND REMOTE LIMIT SWITCH

The Run-Out Table (Figure 80 & Figure 81) attaches to the Exit End of the Shear assembly, and is used to support the panel as it exits the machine. It is available in 10 ft. long sections that fasten together, and have adjustable legs so they can be set to the correct height. The Remote Limit Switch (Figure 7 on page 14) is designed to be used with the run out tables for controlling panel length.

**1.** Set the first Run-Out Table on its side and in front of the machine with the leg assembly away from the shear.
**2.** Open the leg assembly and set it upright on the ground.
**3.** Lift the attachment end of the table and drop it over the 2 threaded bolts on the Shear Run-Out Table Bracket.
**4.** Loosen the 2 knob-handles on the leg assembly and allow the legs to fall free. Sight the height of the table on the left and right side adjusting it level to the machine using the knob-handles to lock the legs in place. See Figure 81 for correct and incorrect set up and details.
**5.** Repeat the above procedures for each succeeding table and attach it to the bracket on the end of the previous table.

CHAPTER 17

# RUN OUT TABLES AND REMOTE LIMIT SWITCH

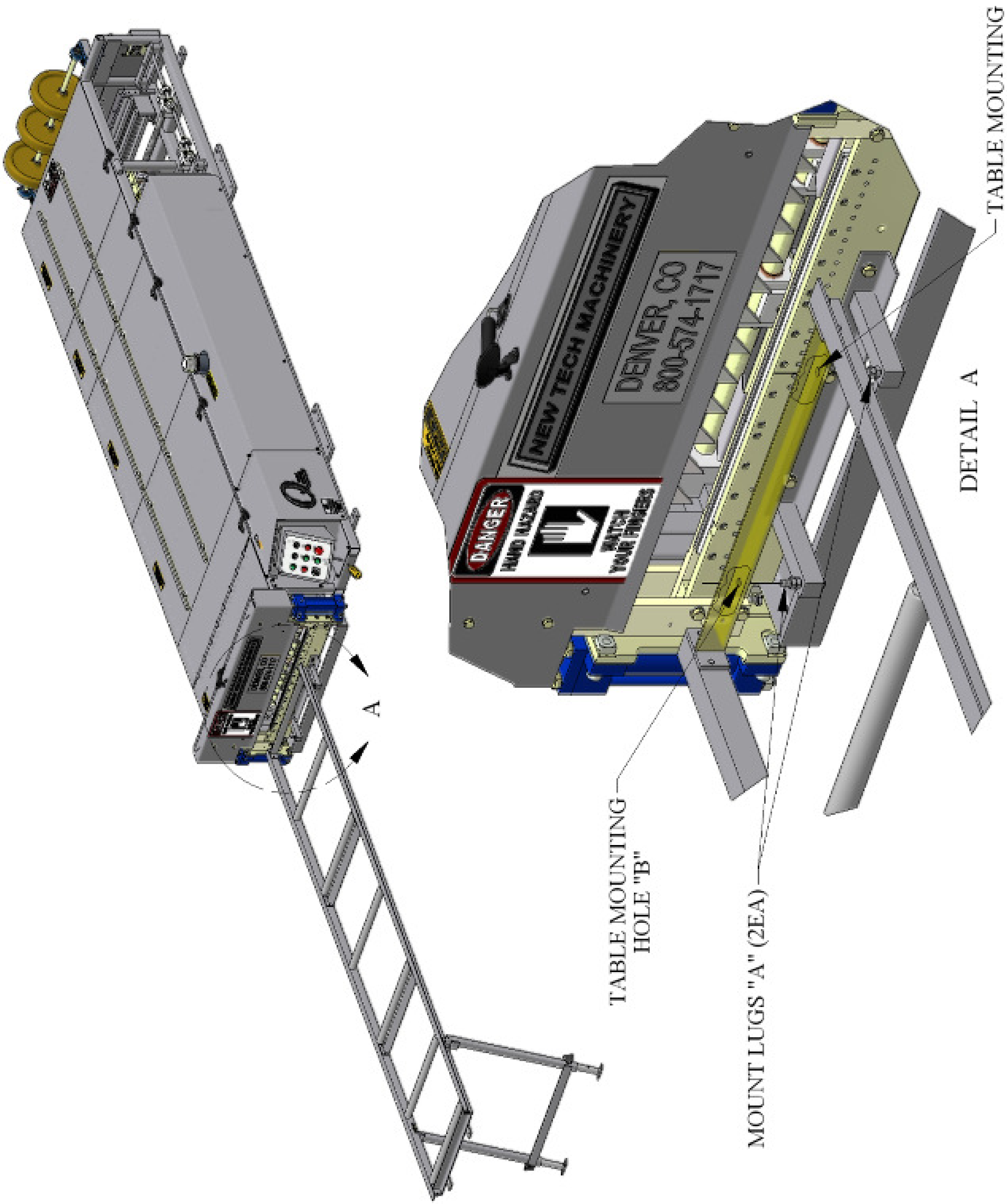



***Figure 80: Run Out Table***

CHAPTER 17

# RUN OUT TABLES AND REMOTE LIMIT SWITCH

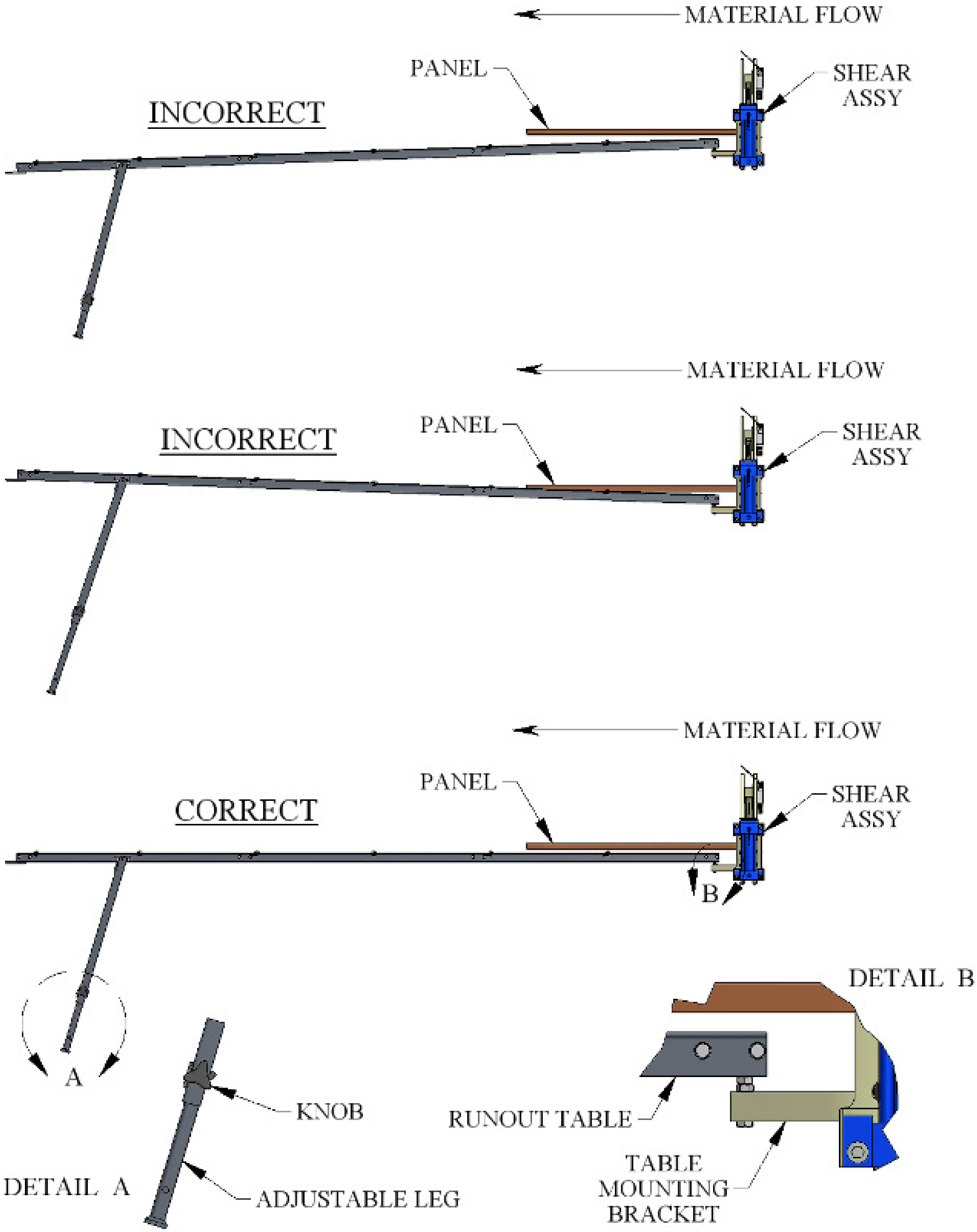



***Figure 81: Run Out Table Setup***

CHAPTER 18

# QUICK CHANGE POWER PAC

## QUICK CHANGE POWER PAC

The Quick Change Power Pac for your machine allows you to change from one power source to another very quickly. For example, it is useful for people who need to run their machine at the jobsite with a gas engine and use it in a factory or indoor setting as well. **It requires two people to lift the Power Pac out of and into the machine.** To change the power pac see below.
Refer to Figure 82

### POWER PAC REMOVAL

1. Remove the screws holding the #1 Left Cover on the machine. Set cover aside.
2. Using a 9/16" wrench, remove the two "A" bolts and set aside for later use.
3. Separate the Male /Female Connectors of the Main Communication Cable by unscrewing them from each other.
4. Un-couple the Large and Small Quick Disconnect hydraulic fittings.
5. Using the two handles, have someone help you lift the Quick Change Power Pac out of the machine and set it aside.

### POWER PAC INSTALLATION

1. Using the two handles provided, have someone help you lift the new Power Pac into position on the machine.
2. Align the two mounting holes under the handles of the Power Pac to the threaded holes in the frame of the machine. Use the two mounting bolts "A" removed above to fasten the Power Pac into place and tighten with the 9/16" wrench.
3. Locate the Male and Female Main Communication Cable and fasten them together. Note that there is a notch in one and a key in the other that must be aligned for the two to mate together correctly.
4. Connect the Large and Small Quick Disconnect fittings.

CHAPTER 18

# QUICK CHANGE POWER PAC

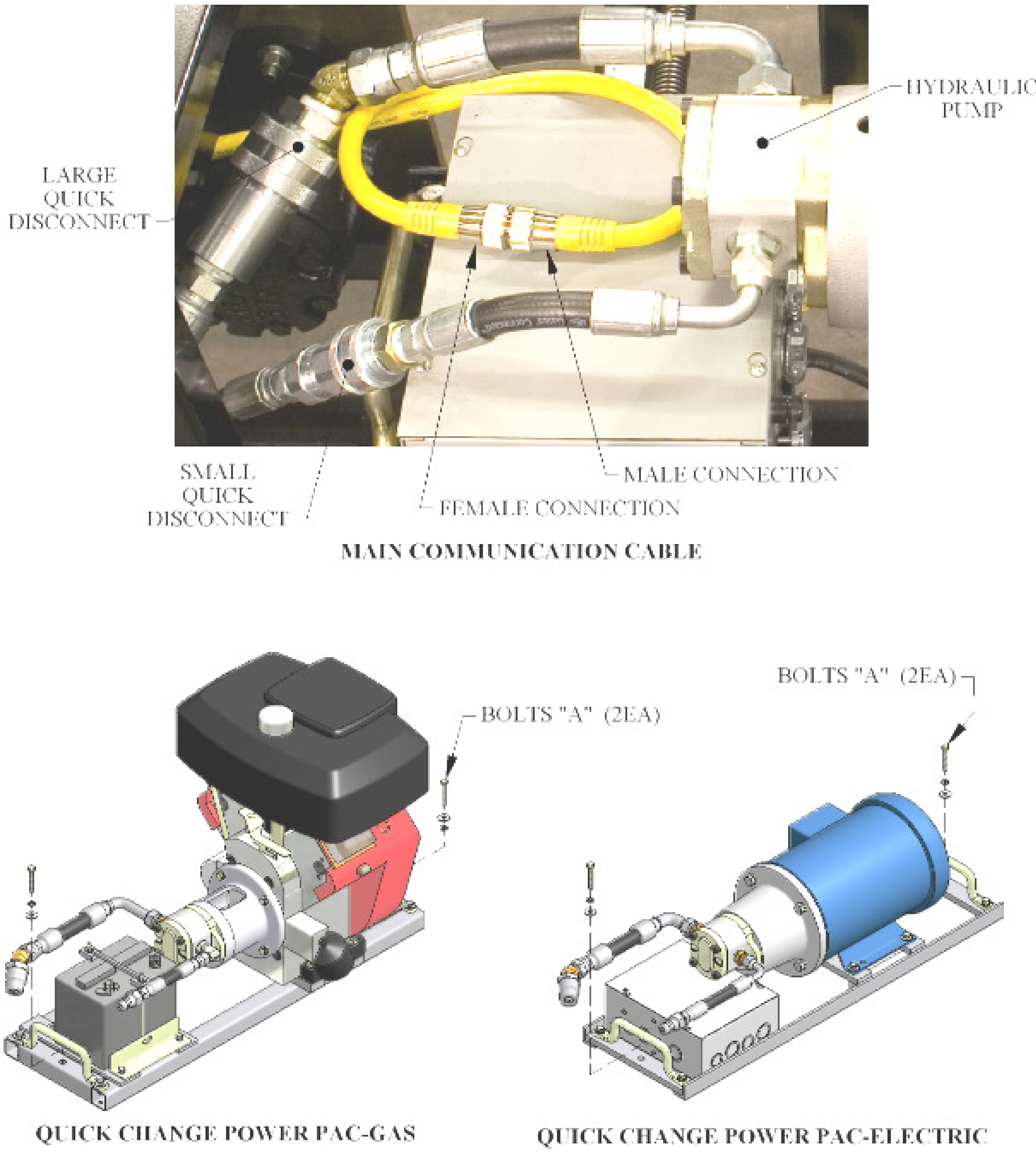



***Figure 82:  Cable Connections and Fasteners***

# TROUBLESHOOTING

The hydraulic system operates the Shear and Drive assemblies. They are interfaced together and electronically activated. The hydraulic system pressure is factory set at 2000 psi and should not be changed. Some of the common problems that occur and their solutions follow below.

1. **Shear travels to the bottom of the stroke and does not return to the top of the stroke. You can hear the hydraulic system laboring and pushing the Red Shear Up Button does not return it to the top of stroke.**

   SOLUTION: Adjust the pressure switch (Figure 83) by turning the silver knurled sleeve "A" **counterclockwise** until the shear goes up. **Note**: If you turn the sleeve to far CCW, you will get problem #2 below on the next cut made.

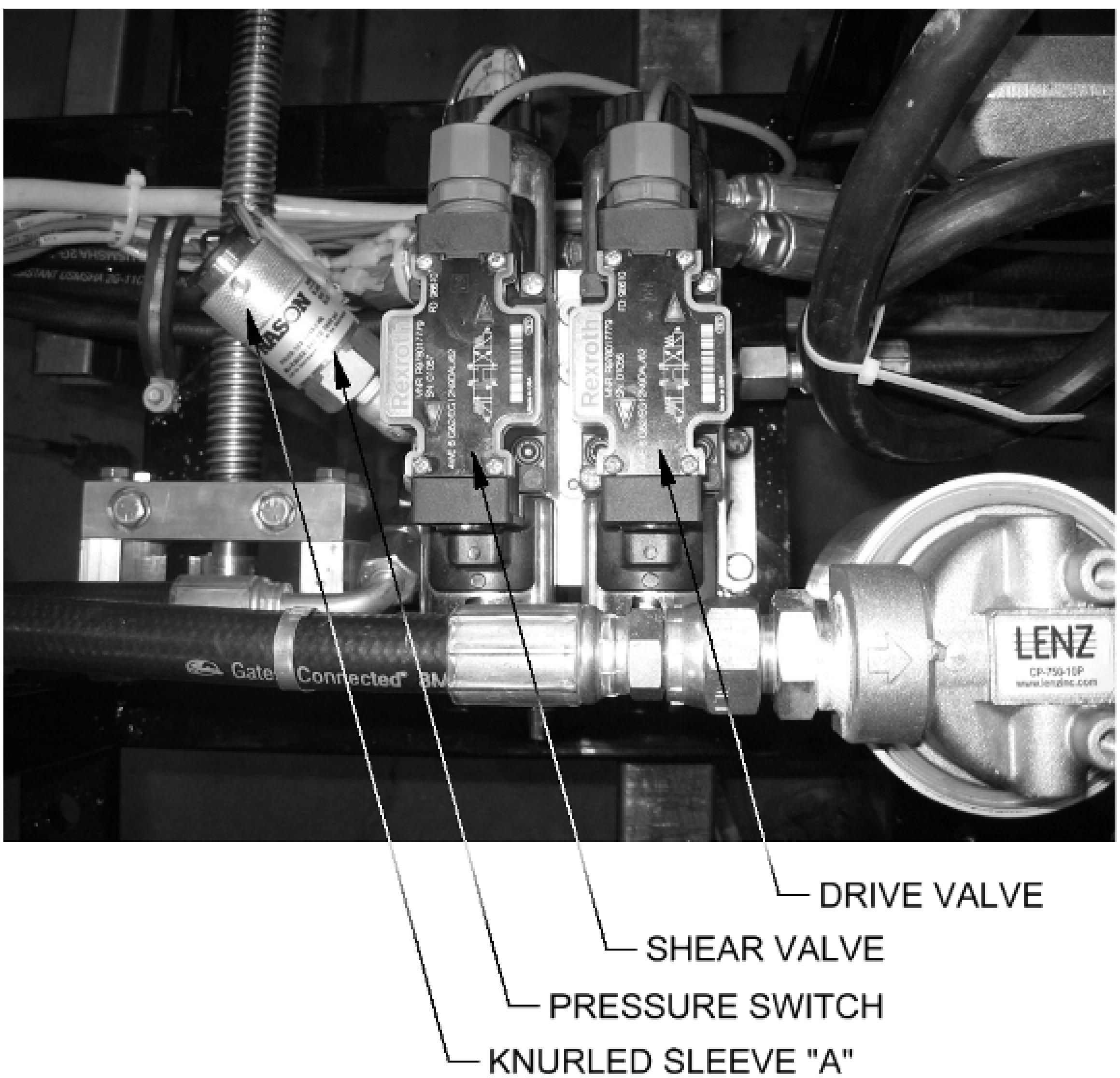



***Figure 83: Pressure Switch Adjustment***

# TROUBLESHOOTING

**2. Shear travels to the bottom of the stroke and returns to the top of the stroke without cutting the panel completely through.**

SOLUTION: Press and hold the Green Shear Down Button until the panel is cut off. Remove the cut panel and jog material out 2 or 3 inches past the shear. Adjust the pressure switch (Figure 83) by turning the silver knurled sleeve “A” clockwise 1/8 of a turn. Press the Shear Down Button again. Check to see if the panel is cut off completely. If not, repeat this procedure until the cut is made with one stroke of the shear. Note: If you turn the knurled sleeve too far CW you will experience problem #1 above.

**3. Shear is at the top of the stroke, you can hear the hydraulic system laboring and you cannot run the next panel.**

SOLUTION: Remove the Shear Cover. Note the 2 Limit Switch Arms “A” (Figure 84). Lift the arms one at a time. If one of them stops the hydraulic system laboring then that Limit Switch arm needs to be adjusted. If neither of them stops it, lift both arms at the same time to see if it stops. If it does then both arms need adjusting. ADJUSTMENT: Tape one or both Limit Switch Arms “A” to the Top Shear Bar “B”. Loosen Hex Nut “C” until spring tension is released. Using a small flat tipped screwdriver, turn Slotted Stud “D” toward the entry end of the machine until you hear a click and stop. Repeat this a few times until you can stop right when the click occurs. While holding this position, tighten Hex Nut “C” to lock in adjustment. Adjust one or both sides as required from test above. Start the engine. If the adjustment/adjustments were done correctly, the hydraulic system should no longer be laboring and you should be able to run the next panel.

CHAPTER 19
# TROUBLESHOOTING

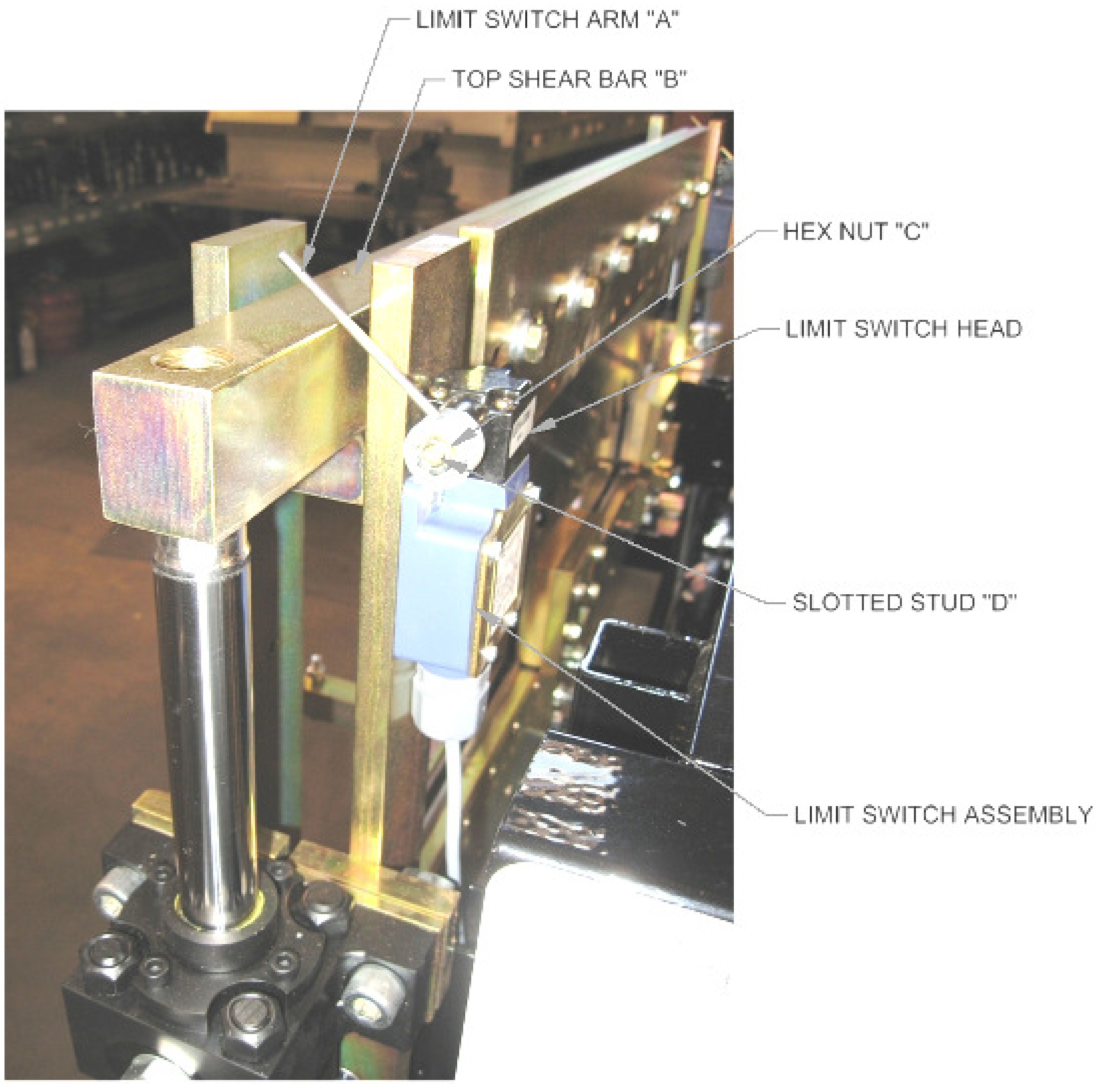



***Figure 84: Limit Switch Adjustment***

**4.** After making a cut, the male or female leg of the next panel gets caught on the exit shear die and damages the panel.

SOLUTION: This problem normally shows up after making a roller system/shear die change. The entry dies both male and female should be as close to the vertical leg of the panel as possible without touching. Once this is achieved, the exit die should be set just outside the vertical leg of the entry die so that as the fresh cut edge of the panel passes by the exit die it doesn't getting caught (Figure 58 on page 62).

**5. The male and or female leg gets crushed when shearing.**

SOLUTION #1: Check the Shear Blades directly over the male and female legs to make sure that the points of the blades are in the correct position (Figure 19 & Figure 20 on page 31).

SOLUTION #2: Make sure that the shear blades and dies are well lubricated on both sides with the proper lubricant (See GENERAL MAINENANCE on page 6).

**6. Manual Control Panel buttons do not work.**

SOLUTION #1: Check fuse inside of Manual Control Box. Replace if blown with a 10-amp time delay fuse (Figure 8 on page 15).

SOLUTION #2: If you have a gasoline engine, check the condition of the battery. The control system requires 12 volts to operate properly. Replace or charge battery as required.

# PLC CONTROLLER

## PLC CONTROLLER




***Figure 85: PLC Assembly***




***Figure 86: Serial Number Plate***

# PLC CONTROLLER

## Home

When the controller is turned on, it will automatically go to the home screen.

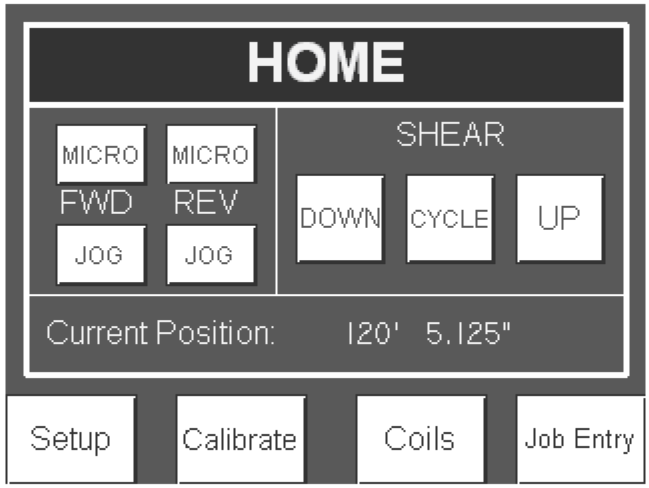



*Figure 87: Home Screen*

## Manual Operation

The machine can be manually operated from the home screen by pressing the Jog and Shear buttons.

**JOG:**

FWD and REV JOG buttons will jog the machine forward and reverse as long as the button is depressed. When the JOG buttons are released, the action will stop. The FWD and REV MICRO buttons will jog the material approximately ¼" each time the button is pressed.

**SHEAR:**

The shear UP and DOWN buttons are momentary and will act in a similar manner as the jog buttons. The SHEAR CYCLE button only needs to be pressed once and the shear will go to the bottom of the stroke and back up to the top. At any time during the shearing cycle, the UP button on the display or red stop button next to the screen can be pressed to return the shear to the top. CAUTION: The shear will stop **without** returning to the top if the E-Stop pushbutton on the manual control box below the PLC is pressed. This button shuts off all power to the machine and machine controls. Upon start-up, the shear will return to the top.

## Automatic Operation

The pre-run sequence must be completed in the correct order before automatic operation can be utilized.

# PLC CONTROLLER

**Pre-Run Sequence:**

1. Jog the material forward using the manual FWD JOG or MICRO buttons on the Home screen or the JOG switch at the entry end of the machine. The material must exit the shear and be detected by the panel detection sensor.
2. Shear the material using the Shear Cycle button. At that point, the machine will be fully loaded with material, the length counter will be reset and the controller will be ready to run in automatic mode.

If the machine goes forward or reverse and the encoder does not detect movement, the pre-run sequence will be reset and the controller will not run in automatic mode. This would happen if the material was cut at the entry end of the machine at the end of a job or at the end of a coil. This could also happen if the encoder did not have proper tension on the material.

## *Job Entry*

Jobs can be programmed to run automatically. From the Home screen, press the Job Entry button to enter the Job Entry Screen.

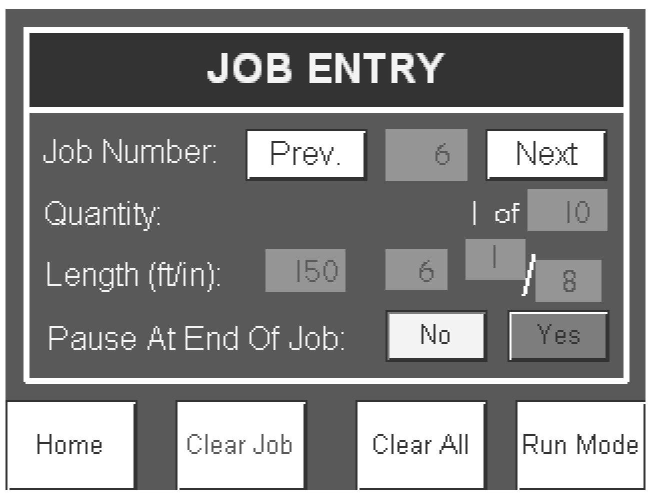



***Figure 88: Job Entry Screen***

## *Programming Jobs*

The controller can store up to ninety nine jobs or lengths, called: Job Numbers. Press the Previous and the Next buttons to change the Job Number. The Job Number display is also an input in order to skip many jobs at a time. Press the Job Number display and enter the desired job number to program or run.
Enter in the quantity of parts to run and the length of the part.
Specify if the machine will pause at the end of job. If Yes is selected, the machine will stop after the job is done running. The user can then press Start to run the next job or return to the Job Entry. If No is selected, the machine will run the current job and automatically start running the next job. If yes is selected and there is no job

programmed after the current job, the controller will stop and return to the Job Entry screen.

### *Clear Jobs*

To clear the current job on the screen press Clear Job. To clear all the jobs in the controller, press Clear All. The next screen will confirm the Clear All command, press Yes to clear all jobs.

### *Auto Run*

Press the Run Mode button to run the jobs that are programmed. Type in the job number to run first (if different than the job that was just programmed).

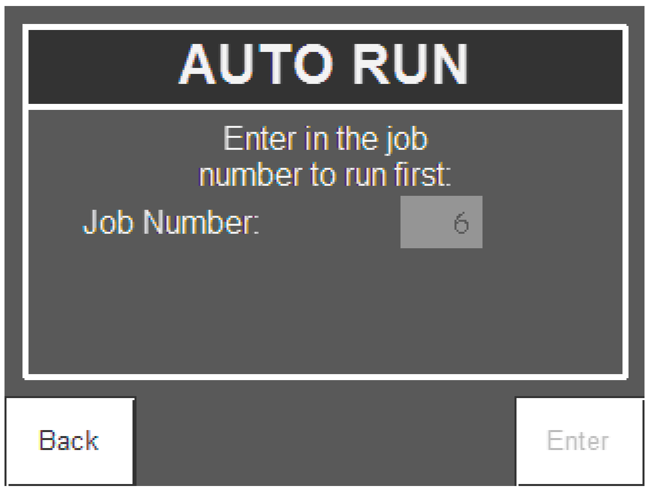



***Figure 89: Specify Job to Run First***

Then hit Enter to continue to the Auto-Run mode.

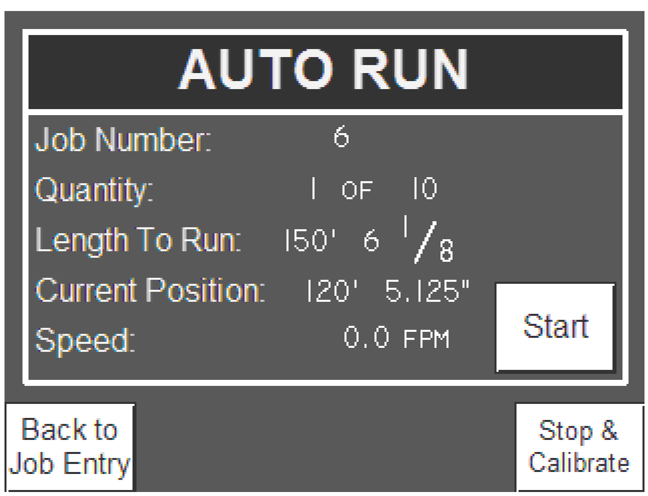



***Figure 90: Auto-Run Screen***

# PLC CONTROLLER

## Automatic Operation

In the Auto Run screen, the current job and progress are displayed. Press the Start button to begin running the job. When the current job is complete the next job will start if the No button for pause was pressed for the current job. If the Yes button was pressed for pause or if there is no next job programmed, the controller will return to the Job Entry screen after the current job is completed.

## On the Fly Calibration

The controller can be calibrated at any time while the machine is running to improve accuracy of the parts being run. If the machine is consistently making parts too short or too long, press Stop & Calibrate to bring up the Calibration screen.

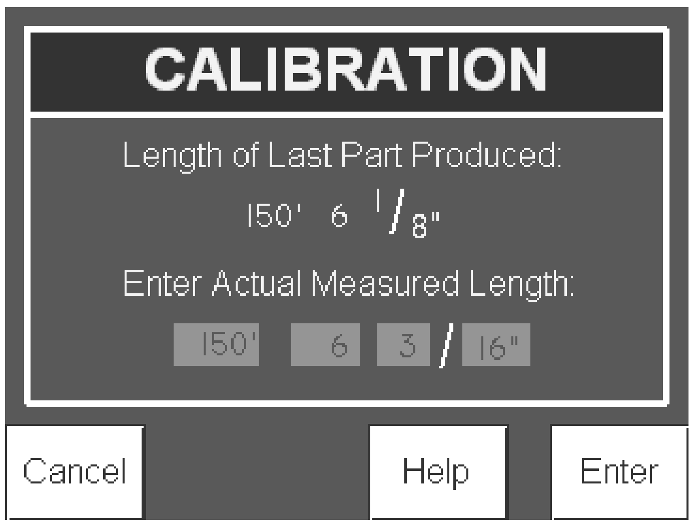



***Figure 91: Calibration Screen***

The length of the last part will automatically populate to the length that the controller 'thought' was run. Measure the length of the part, enter in the actual measured length and press Enter to re-calibrate the controller. Or press cancel to return to the Auto-Run screen. Press Start on the Auto-Run screen to continue operation.

## Calibration

The controller can also be calibrated from the Home screen by pressing the Calibrate button. On the calibration screen, enter in the desired part length to use to calibrate the controller. A length of over 12" is required and a length of 36" or more is recommended. Press the Start button to run the specified part.

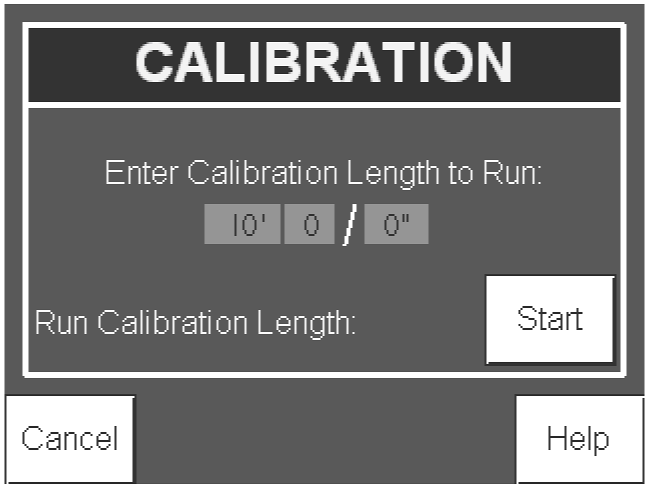



***Figure 92: Calibration Screen***

The controller will display the theoretical length of the part after it is produced. The theoretical length may be slightly different than the intended calibration length due. Measure the length of the part and input the length in the Actual Measured Length fields. Press Enter to re-calibrate the controller or Cancel to return to the Home screen without making any changes to the controller.

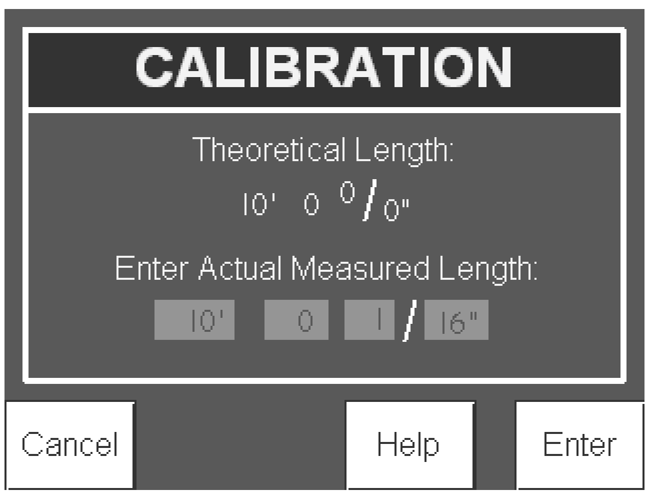



***Figure 93: Calibration Screen***

## *Setup:*

From the Home screen, press the Setup button to make setting changes to the controller.

# PLC CONTROLLER

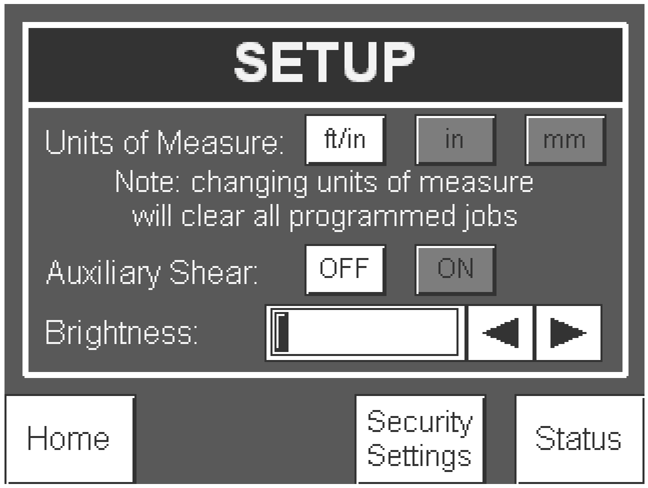



*Figure 94: Setup Screen*

In the Setup screen, the Units of Measure can be changed to Imperial units in either feet and inches (ft/in) or only inches (in) or Metric units (mm).

Example:

ft/in: 10’ 4 1/16”
in: 124 1/16”
mm: 3,151mm

The shear operation can be turned on and off if an auxiliary shear such as the Swenson Snap Table will be utilized.
The brightness of the display can also be adjusted up or down by pressing the right and left arrow buttons.

## *Status/Diagnostics:*

In order to help troubleshoot the machine, press the Status button found in on the setup screen to bring up the status of the machine as seen from the controller.

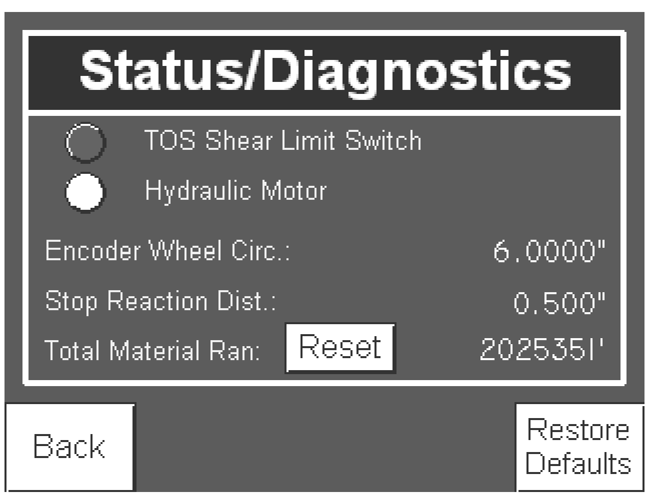



*Figure 95: Status Screen*

# PLC CONTROLLER

The Status 1 screen shows the condition of the Hydraulic Pressure Switch and the Top of Stroke Limit Switch. If one or both of the TOS Shear Limit Switches are not activated the TOS Shear Limit Switch light will be on. Refer to the Shear section in the machine manual for limit switch adjustment.
If the motor is not on or if the pressure switch is not activated then the Hydraulic Motor light will be on.
The Status screen lists the Encoder Wheel Circumference. This value is changed automatically when the controller is calibrated. The Stop Reaction Distance is also automatically changed by the controller as the machine runs. In order to reset these values, press the Restore Defaults button. NOTE: Calibration should be initiated following the defaults restore. The Total Material Ran through the machine with the controller on is shown on this screen. The Total Material Ran can be reset by pressing the Reset button. If the security is turned on, the password will be required to reset the Total Material Ran.
Press Back to return to the Setup Screen.

## *Security:*

From the Setup screen press the Security Settings button to enter the security screen. The default password is: 1234.

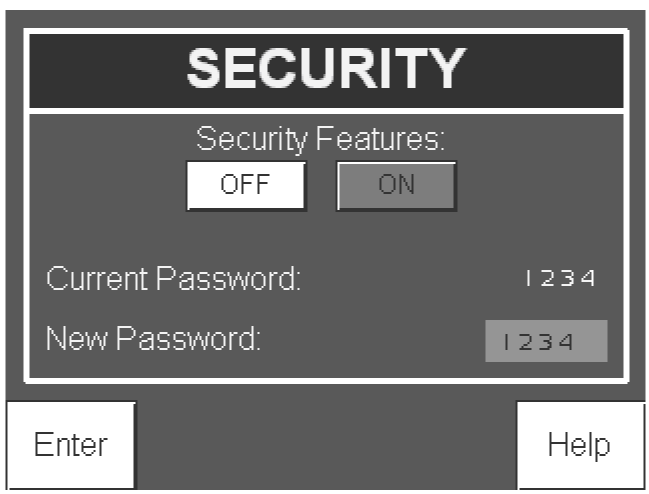



***Figure 96: Security Screen***

If the security is turned on, the password will be required to change the stored coil lengths and colors or to reset the Total Material Ran value (totalizer). If security is turned off, no password is needed to make changes to these values. With security turned off the Security screen displays the current password which can be changed by entering a new password and pressing the enter button. Once this is done, the new password will be needed to make any changes to the coil lengths and colors or to reset the Total Material Ran.

# PLC CONTROLLER

## Coil Tracking:

From the Home screen, press the Coils button to change the coil of material to track. If the security is turned on, a password must be entered if changes to the stored coils are necessary. If security is turned off, the controller will display the current coil screen and changes can be made without the password.

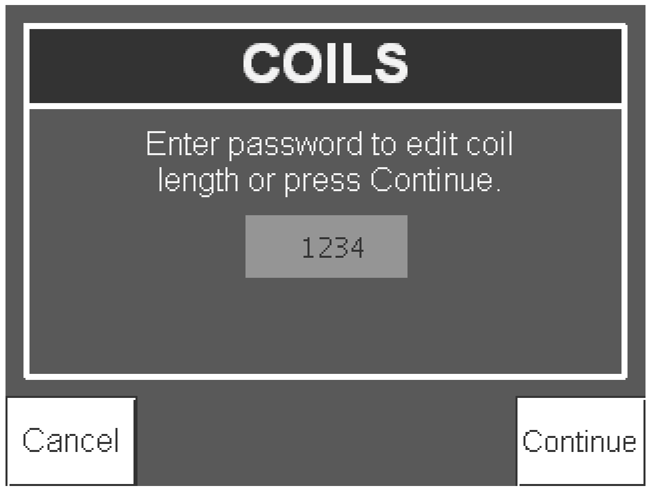



***Figure 97: Coils Password Access Screen***

Without the password, press Continue to view the Coils screen.

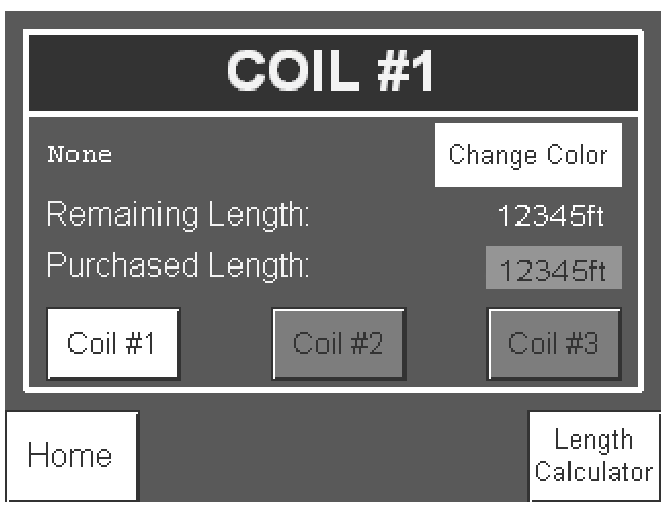



***Figure 98: Coils Screen***

The controller has the ability to track the length of three different coils of material. Press Coil #1, 2 or 3 to change the coil to be run through the machine. When a new coil is purchased, press the Purchased Length numerical display to input the length of the coil into the controller. The Remaining Length will reset to the new purchased length. As material is run through the machine, the controller will subtract material from the remaining length. The coil (#1, 2 or 3) that is displayed when the Home button is pressed will be the coil that the controller subtracts material from as the machine is run.

**Example:**

The controller is set to run a black coil designated as Coil #2 and the user changes to a white coil designated by Coil #1. From the Home screen, press the Coils button which will bring up the Coil #2 information. Press the Coil #1 button and then the Home button.

If the remaining length reads negative then the machine has tracked more material than the purchased length.

**Example:**

If a purchased length of 100’ is input into the controller then 115’ of material is ran through the machine before the coil is gone, the controller will read a remaining length of -15’.

There is an indicator on the top right of the Home screen that indicates which coil is being tracked.

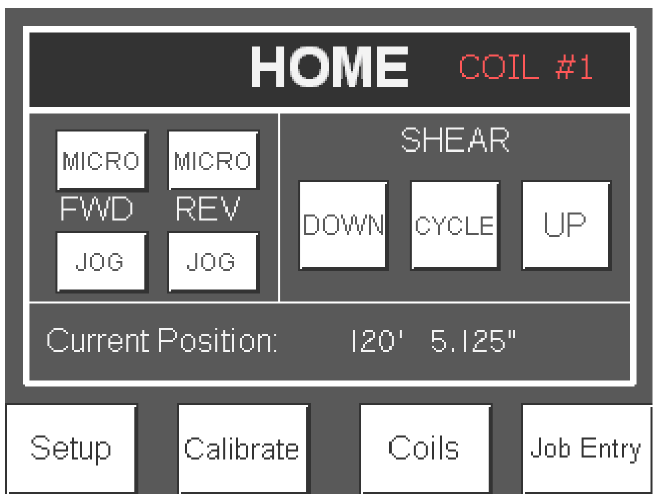



***Figure 99: Coil Indicator***

## *Colors*

Press the Change Color button to select the color of the coil. Press the Cancel button to avoid changing the color of the coil.




***Figure 100: Coils Color Screen***

## *Coil Length Calculator*

The controller has a built in calculator to estimate the length of a coil based on the dimensions of the coil. From the Coils screen, press Length Calculator button.

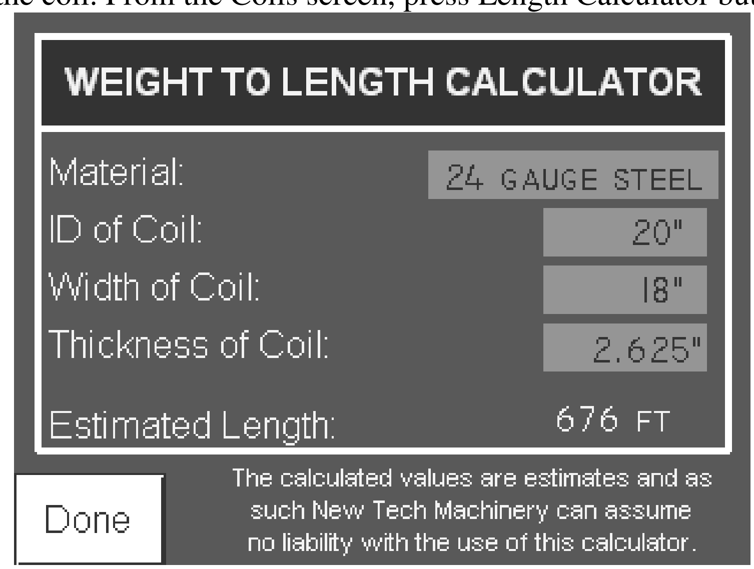



***Figure 101: Length Calculator Screen***

Press the Select Material button to select the thickness and type of material.

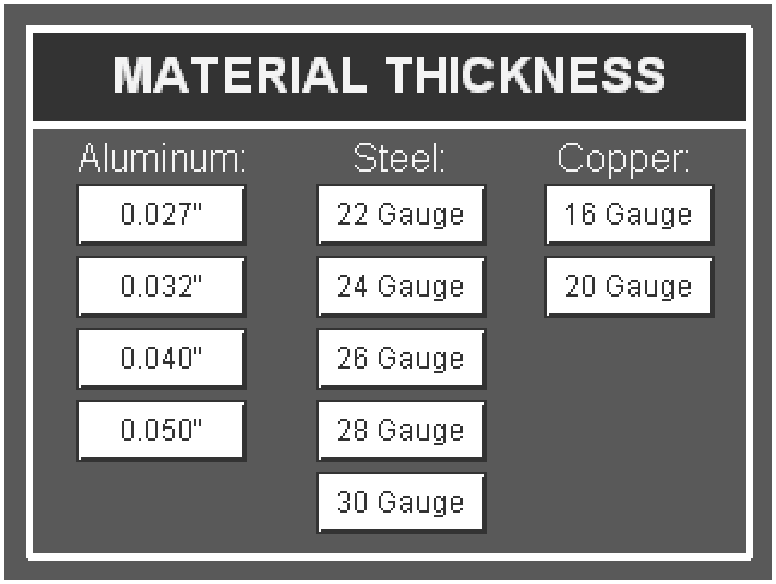



***Figure 102: Material and Thickness Screen***

Then enter in the Inside Diameter of the Coil, Width of the coil and thickness of the coil. The thickness of the coil is the difference between the Inside Diameter (ID) and the Outside Diameter (OD). When all the fields are populated, the calculator estimates the length of the coil. Press the Done button to return to the Coils screen.

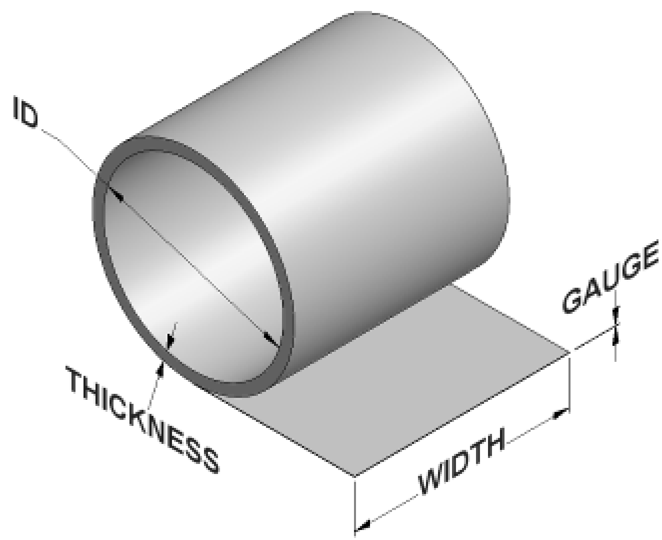



***Figure 103: Coil Dimensions***

APPENDIX B

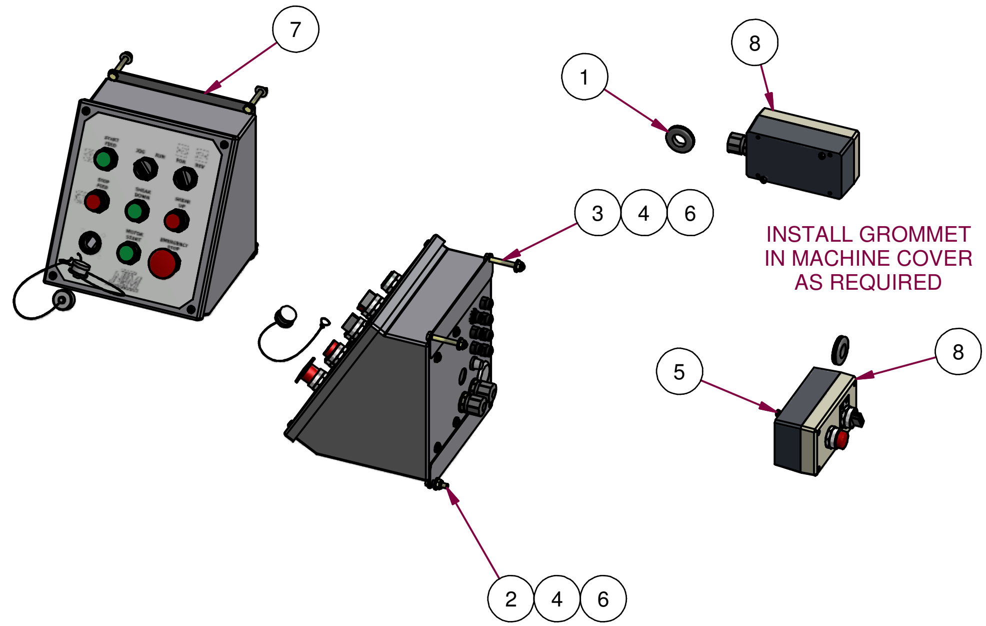
# ELECTRICAL SCHEMATICS

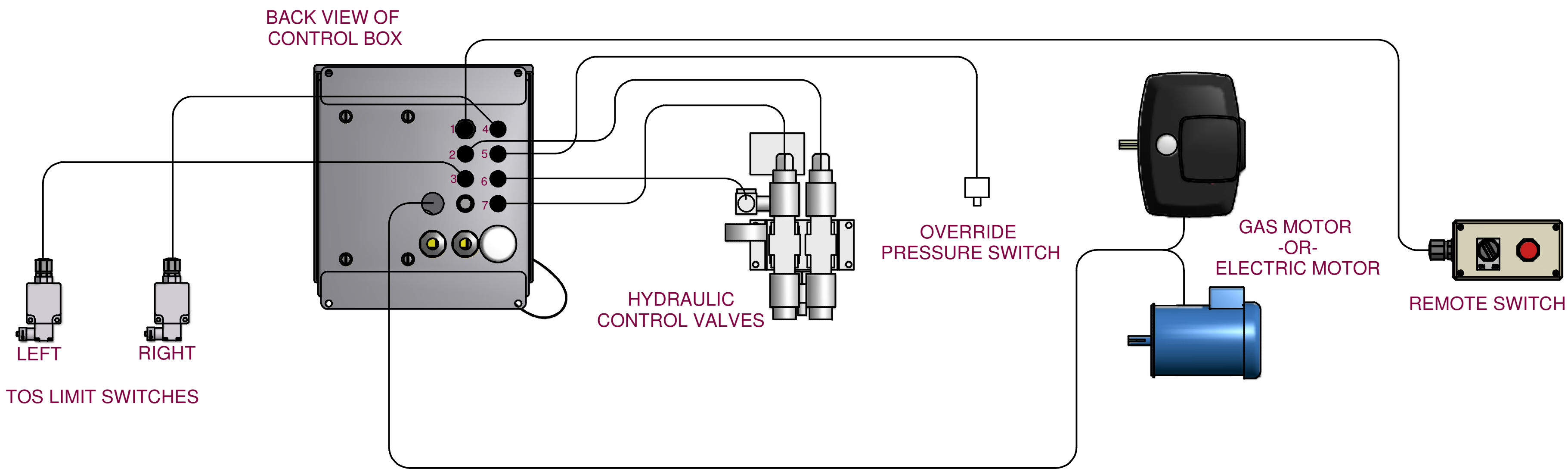
## ELECTRICAL SCHEMATICS

| Drawing Number | Sheet Number | Description |
|---|---|---|
| PLC-380-000 | 1 | Electrical Assembly – Parts List |
| PLC-380-000 | 2 | Electrical Assembly – Wiring Details |
| | | |
| PLC-381-000 | 1 | Control Box Assembly – Parts List |
| PLC-381-000 | 2 | Control Box Assembly – Outside & Inside Views |
| PLC-381-000 | 3 | Control Box Assembly – Wiring Schematic |
| PLC-381-000 | 4 | Control Box Assembly – Ladder Logic 1 |
| PLC-381-000 | 5 | Control Box Assembly – Ladder Logic 2 |

Parts List

| ITEM | QTY | PART NUMBER | TITLE |
|---|---|---|---|
| 1 | 1 | ELC-300-138 | GROMMET, 3/4" ID, 1-1/2" OD |
| 2 | 1 | FAS-HC5-118 | HEX HEAD CAP SCREW, 1/4-20 x 1" LG. |
| 3 | 2 | FAS-HC5-278 | HEX HEAD CAP SCREW, 1/4-20 x 2" LG. |
| 4 | 3 | FAS-NUY-188 | NYLOC HEX NUT, #1/4-20 |
| 5 | 2 | FAS-SRM-207 | SCREW, PAN HEAD, 8 x 1/2", PHIL, SELF-TAPPING |
| 6 | 4 | FAS-WSF-260 | WASHER, FLAT, 1/4" SAE |
| 7 | 1 | PLC-381-000 | CONTROL BOX ASSEMBLY |
| 8 | 1 | PLC-382-000 | REMOTE PUSH BUTTON BOX |




NOTE: UNLESS OTHERWISE SPECIFIED.
1. R=.015

| MATERIAL | LENGTH | FINISH |
|---|---|---|
| SEE BOM | - | NONE |

REVISION HISTORY

| REV | ECR NO. | DATE | RELEASED BY |
|---|---|---|---|
| 0 | R-1757 | 10/25/2011 | AJB |

TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2°

***NEW TECH MACHINERY CORP.***

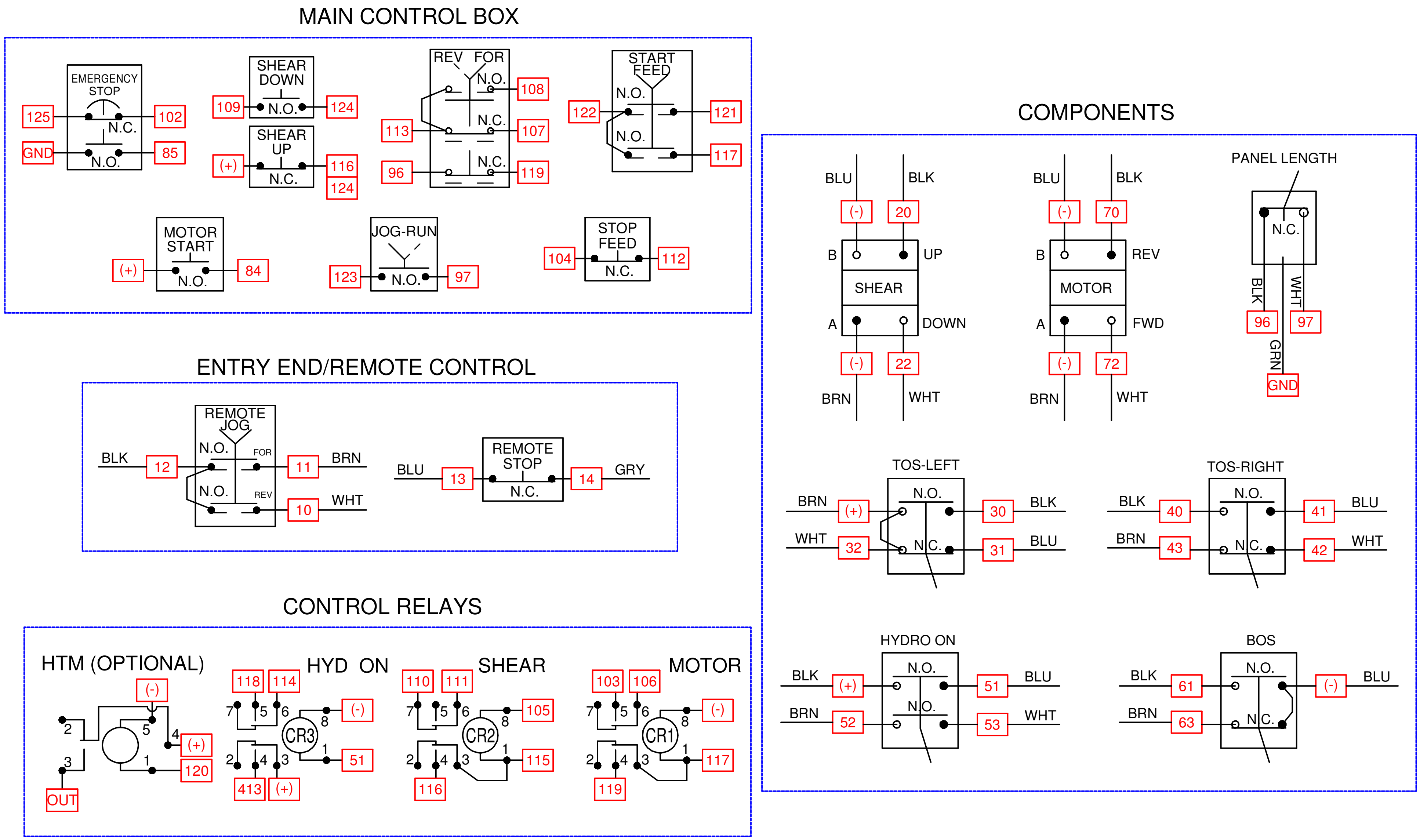
DRAWN BY BT
DATE 01-27-2011
CHECK BY AJB
DATE 10/25/2011

PART NAME: ELECTRICAL ASSEMBLY

PART NUMBER: PLC-380-000

SHEET 1 OF 2

REVISION 0




NOTE: UNLESS OTHERWISE SPECIFIED.
1. R=.015

| MATERIAL | LENGTH | FINISH |
|---|---|---|
| SEE BOM | | |

REVISION HISTORY

| REV | ECR NO. | DATE | RELEASED BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2˚

***NEW TECH MACHINERY CORP.***

DRAWN BY
DATE
CHECK BY
DATE

PART NAME: ELECTRICAL ASSEMBLY

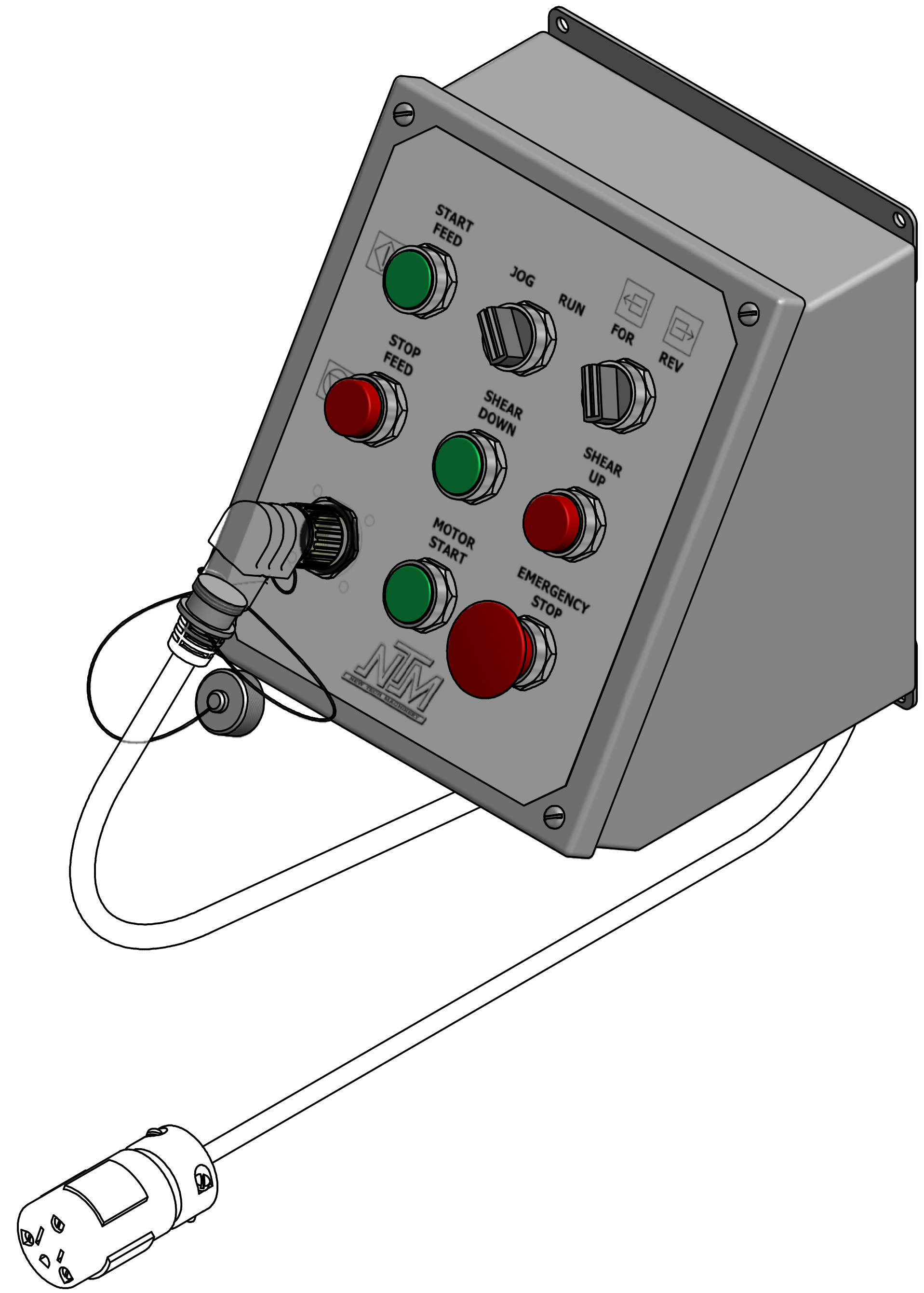
PART NUMBER: PLC-380-000

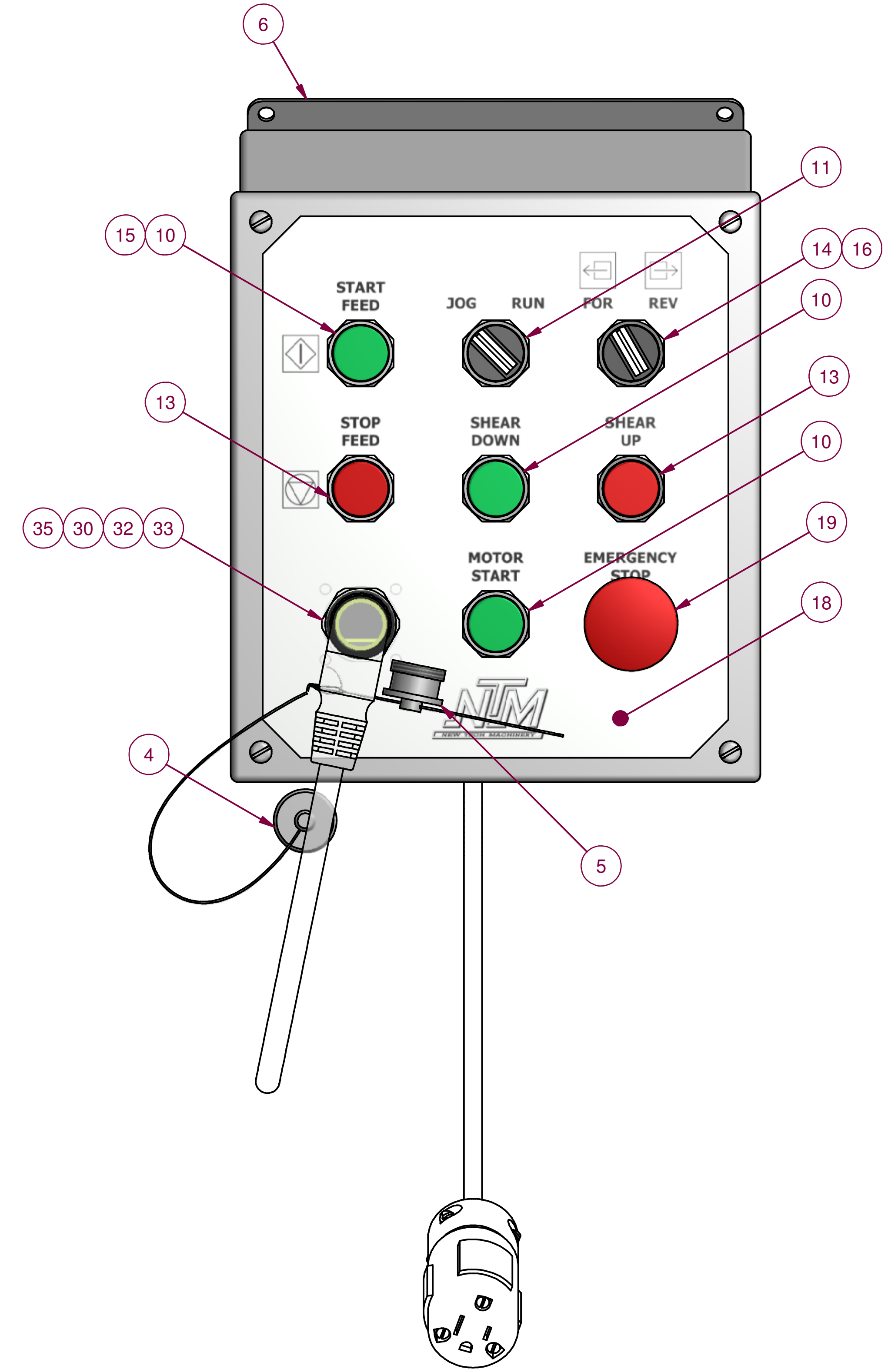
SHEET: 2 OF 2

REVISION: 0

| PARTS LIST | | | |
|---|---|---|---|
| ITEM | QTY | PART NUMBER | TITLE |
| 1 | 34 | ELC-100-006 | TERMINAL BLOCK, 10A |
| 2 | 3 | ELC-100-007 | DIN RAIL STOP (NOT SHOWN) |
| 3 | 12 | ELC-100-008 | TERMINAL BLOCK JUMPER (NOT SHOWN) |
| 4 | 1 | ELC-100-017 | FEMALE CLOSURE CAP |
| 5 | 1 | ELC-100-018 | MALE CLOSURE CAP |
| 6 | 1 | ELC-100-021 | ENCLOSURE |
| 7 | 6 | ELC-100-025 | RECEPTACLE, 4 PIN MALE x.5M |
| 8 | 1 | ELC-100-026 | RECEPTACLE, 5 PIN MALE x.5M |
| 9 | 1 | ELC-300-101 | FUSEHOLDER BUS HKP |
| 10 | 3 | ELC-300-103 | PUSH BUTTON, GREEN |
| 11 | 1 | ELC-300-104 | SELECTOR SWITCH, W/1 N.O. |
| 12 | 1 | ELC-300-105 | FUSE, 10A, 250V, TIME DELAY |
| 13 | 2 | ELC-300-107 | PUSH BUTTON, RAISED RED |
| 14 | 1 | ELC-300-109 | SELECTOR SWITCH, 2 POS,1 N.O. 1 N.C. |
| 15 | 1 | ELC-400-017 | IDEC #HW-C10 N/O CONTACT BLOCK |
| 16 | 1 | ELC-400-018 | IDEC #HW-C01 N/C CONTACT BLOCK |
| 17 | 1 | ELC-400-045 | HOLE SEAL, 1/2" KO |
| 18 | 1 | ELC-400-046 | LEXAN OVERLAY, PANEL |
| 19 | 1 | ELC-400-061 | BUTTON, MUSHROOM, PUSH/PULL |
| 20 | 5 | ELC-400-079 | RING TERMINAL, 3/16" EYE, 14-16GA (NOT SHOWN) |
| 21 | 3 | ELC-400-123 | 2 POLE RELAY BASE |
| 22 | 3 | ELC-400-125 | 2 POLE RELAY, 12VDC |
| 23 | 2 | ELC-425-020 | STRAIN RELIEF, 1/2" NPT |
| 24 | 16 | FAS-NUF-170 | JAM NUT, #10-32 |
| 25 | 8 | FAS-SPN-340 | SCREW, PAN HEAD, 10-32 x 3/4" , SLOTTED |
| 26 | 4 | FAS-SRM-201 | PHILLIPS PAN HEAD SCREW, 10-32 x 3/8" |
| 27 | 8 | FAS-WRF-244 | 10 RUBBER WASHER |
| 28 | 12 | FAS-WSF-344 | WASHER, FLAT, #10 SAE |
| 29 | 20 | FAS-WSL-404 | WASHER, LOCK, SPLIT, #10 |
| 30 | 1 | MHW-100-012 | 7/8 ID X 1 1/8 OD X 1/8 T GASKET |
| 31 | 1 | PLC-100-006 | DIN RAIL, 8" LONG |
| 32 | 1 | PLC-100-010 | TURCK RECEPTACLE EXTENSION |
| 33 | 2 | PLC-381-002 | TERMINAL BLOCK MOUNTING PLATE |
| 34 | 1 | PLC-390-000 | PUSH BUTTON BOX WIRE KIT (NOT SHOWN) |
| 35 | 1 | SHM-400-132 | SHIM, 1" ID x 1½" OD x .031 |
| 36 | 1 | SSR-381-072 | DIN RAIL, 5.50 LONG |

1 ADDED SHM-400-132 TO INSIDE OF 16-PIN RECEPTACLE ON FRONT




| MATERIAL | LENGTH | FINISH |
|---|---|---|
| SEE BOM | N/A | NONE |

REVISION HISTORY

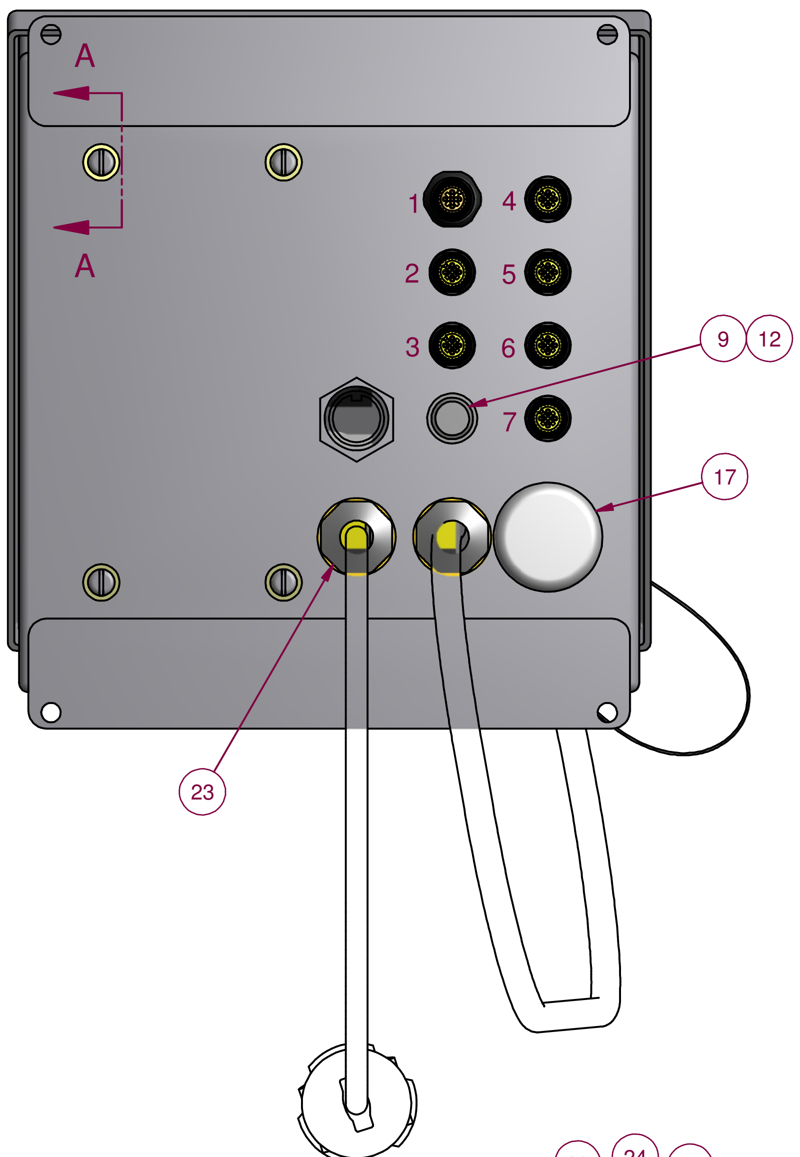
| REV | ECR NO. | DATE | RELEASED BY |
|---|---|---|---|
| 0 | R-1757 | UNK | UNK |
| 1 | R-1800 | 10/20/2011 | AJB |

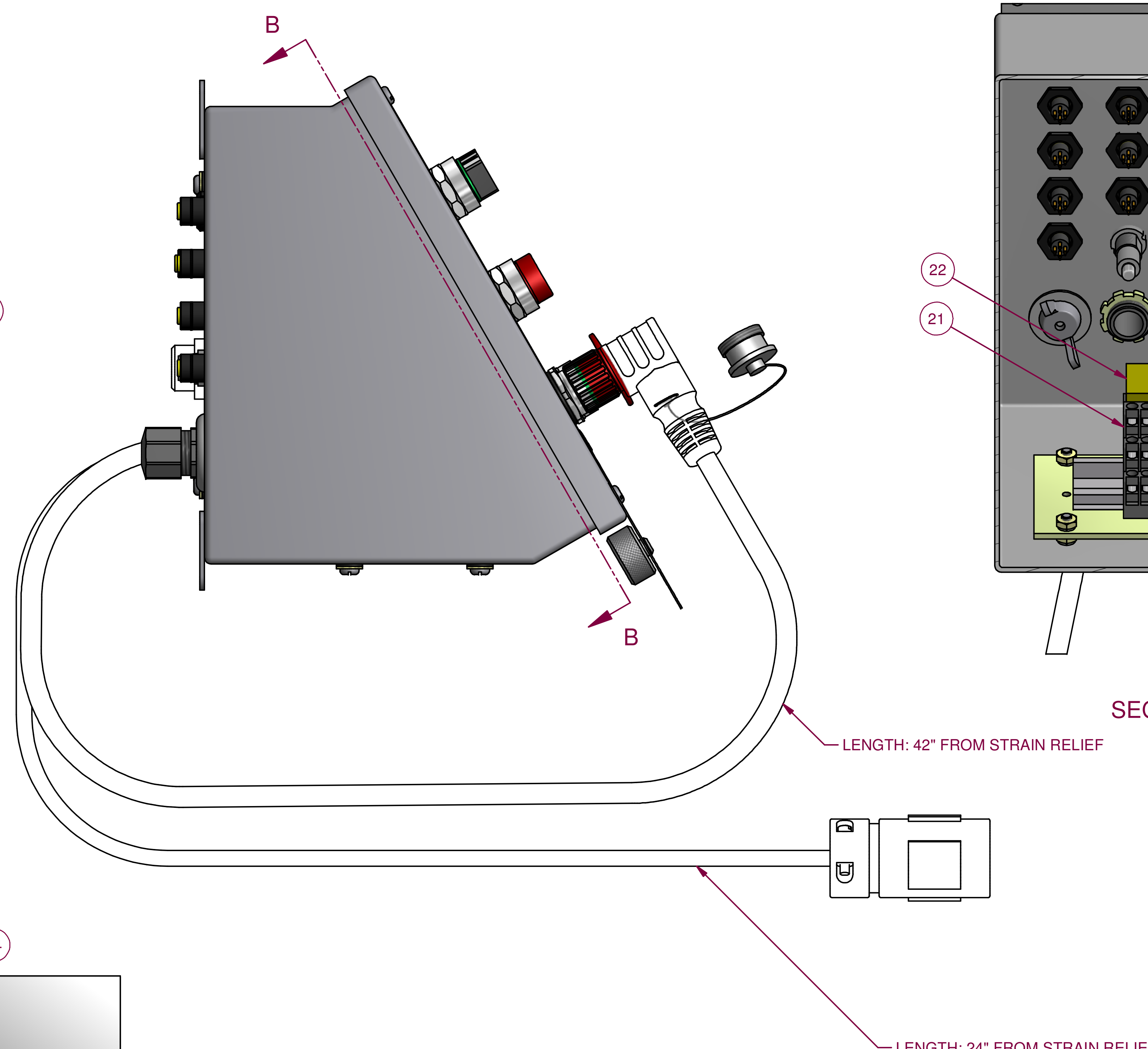
TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2˚

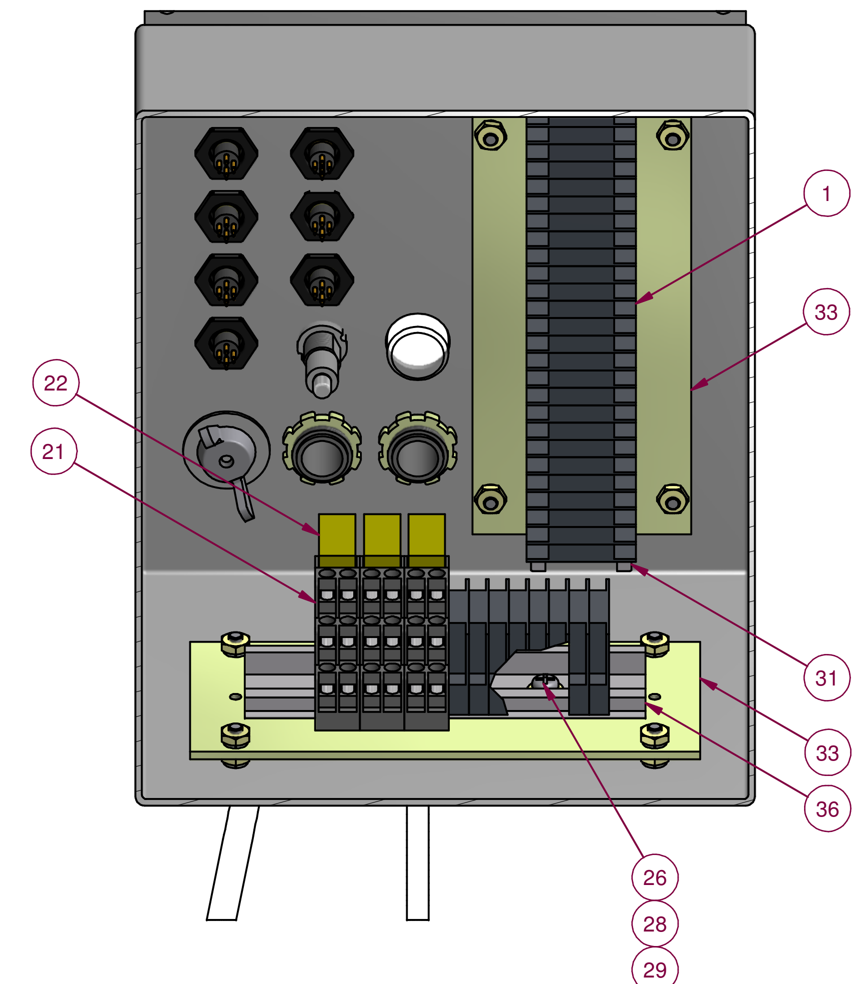
**NEW TECH MACHINERY CORP.**

DRAWN BY: BT
DATE: 01-26-2011
CHECK BY: AJB
DATE: 10/20/2011

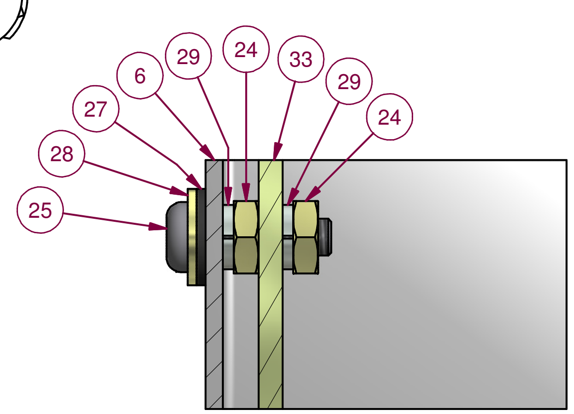
PART NAME: CONTROL BOX ASSEMBLY
PART NUMBER: PLC-381-000
SHEET: 1 OF 5
REVISION: 1




SECTION B-B




SECTION A-A
TO ATTACH TERMINAL BLOCK
MOUNTING PLATE TO ENCLOSURE

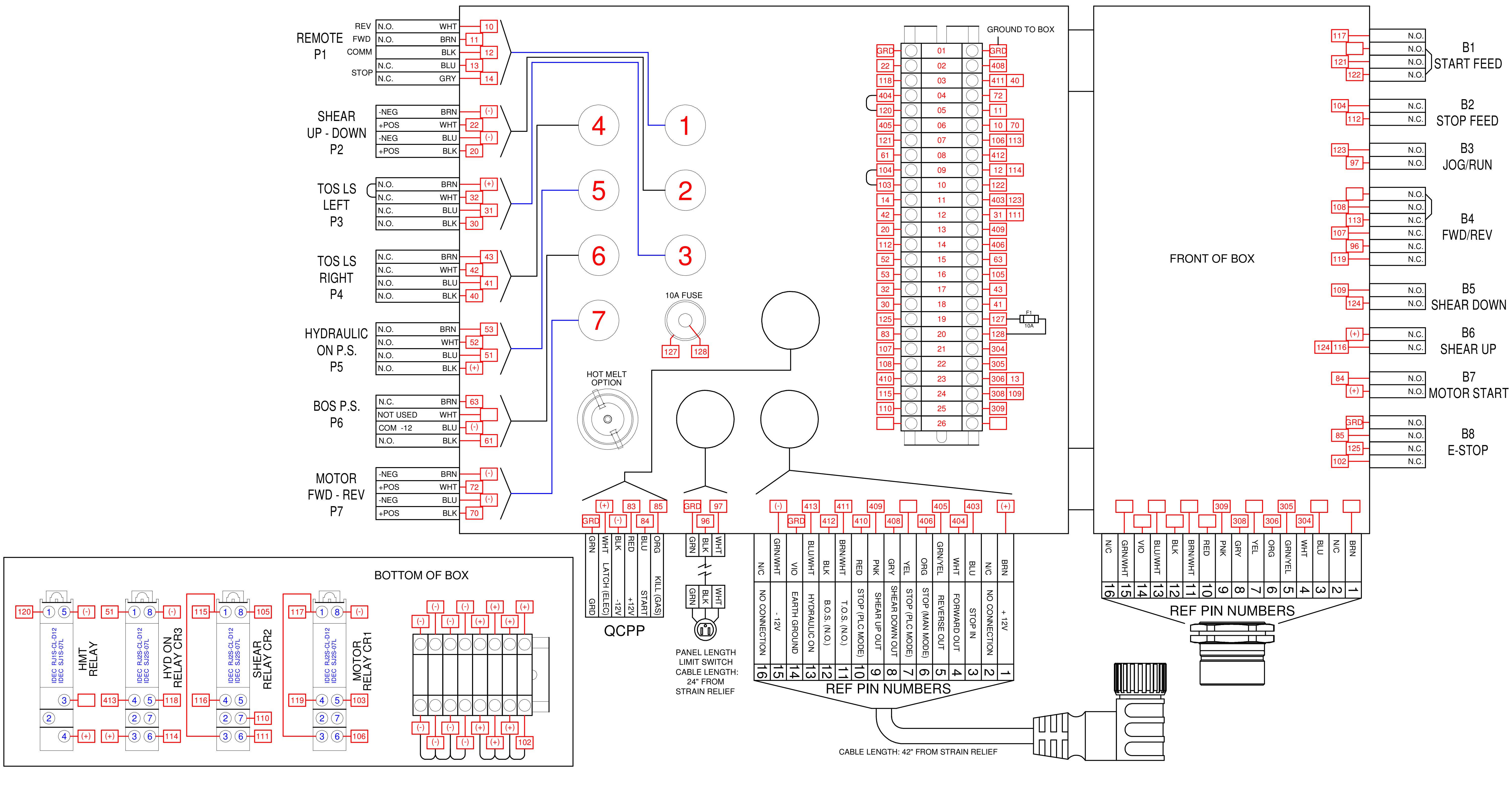
| MATERIAL | LENGTH | FINISH |
|---|---|---|
| SEE BOM | | |

| REVISION HISTORY | REV | ECR NO. | DATE | RELEASED BY |
|---|---|---|---|---|
| | | | | |

TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2˚

NEW TECH MACHINERY CORP.

| DRAWN BY | PART NAME | | |
|---|---|---|---|
| DATE | CONTROL BOX ASSEMBLY | | |
| CHECK BY | PART NUMBER | SHEET | REVISION |
| DATE | PLC-381-000 | 2 OF 5 | 1 |




| MATERIAL | SEE BOM | LENGTH | FINISH |
|---|---|---|---|

| REVISION HISTORY | REV | ECR NO. | DATE | RELEASED BY |
|---|---|---|---|---|

TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2˚

**NEW TECH MACHINERY CORP.**

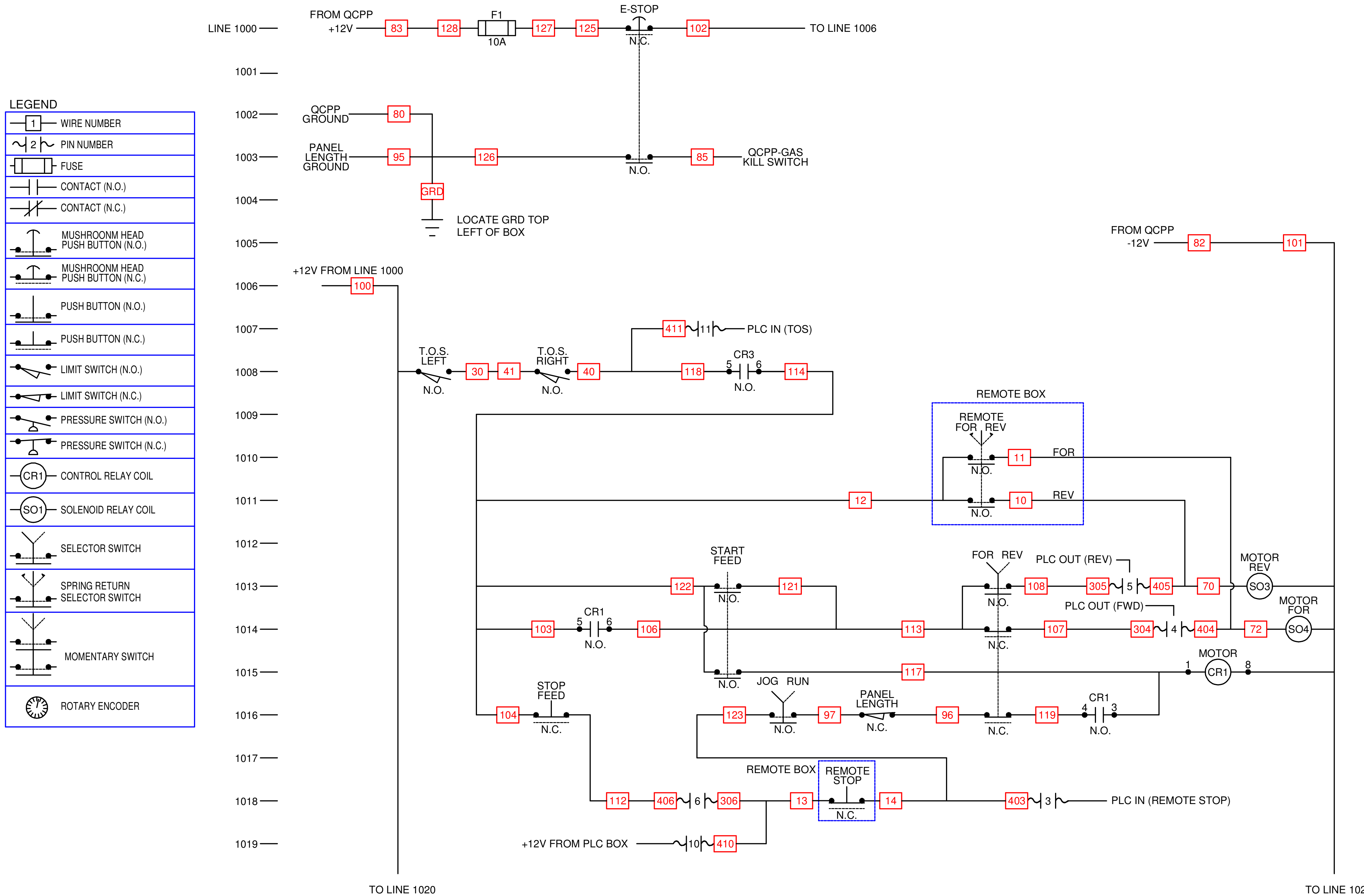
DRAWN BY / DATE / CHECK BY / DATE

PART NAME: CONTROL BOX ASSEMBLY

PART NUMBER: PLC-381-000

SHEET: 3 OF 5

REVISION: 1




| MATERIAL | | LENGTH | FINISH |
|---|---|---|---|
| SEE BOM | | | |

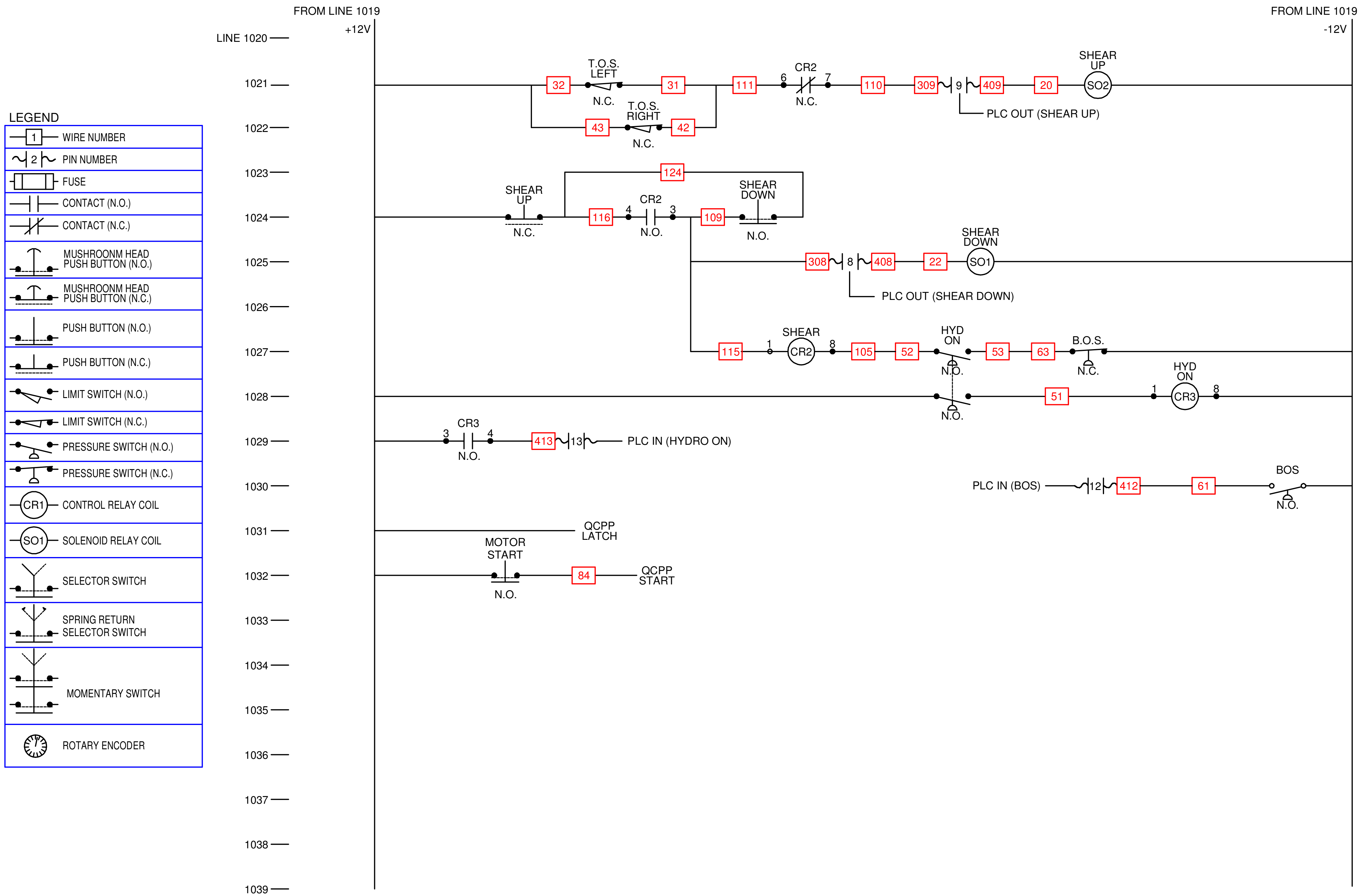
REVISION HISTORY

| REV | ECR NO. | DATE | RELEASED BY |
|---|---|---|---|
| | | | |

TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2˚

**NEW TECH MACHINERY CORP.**

| DRAWN BY | PART NAME | | |
|---|---|---|---|
| DATE | CONTROL BOX ASSEMBLY | | |
| CHECK BY | PART NUMBER | SHEET | REVISION |
| DATE | PLC-381-000 | 4 OF 5 | 1 |




| MATERIAL | LENGTH | FINISH |
|---|---|---|
| SEE BOM | | |

REVISION HISTORY

| REV | ECR NO. | DATE | RELEASED BY |
|---|---|---|---|
| | | | |

TOLERANCES
.XX = ± .01
.XXX = ± .005
FRACTION = ± 1/32"
ANGLE = ± 1/2˚

**NEW TECH MACHINERY CORP.**

DRAWN BY
DATE
CHECK BY
DATE

PART NAME: CONTROL BOX ASSEMBLY

PART NUMBER: PLC-381-000

SHEET: 5 OF 5

REVISION: 1